Ettco-Emrick

STEVE DZIADZIO

G. A. GILLIES
Factory Representative
4484 Cass Ave. — Detroit 1, Mich.
Room 203 — TEmple 1-1666—7

DRILL CHUCKS

•

TAPPING DEVICES

•

MULTIPLE TAPPING AND DRILLING HEADS

•

TAPPING MACHINES

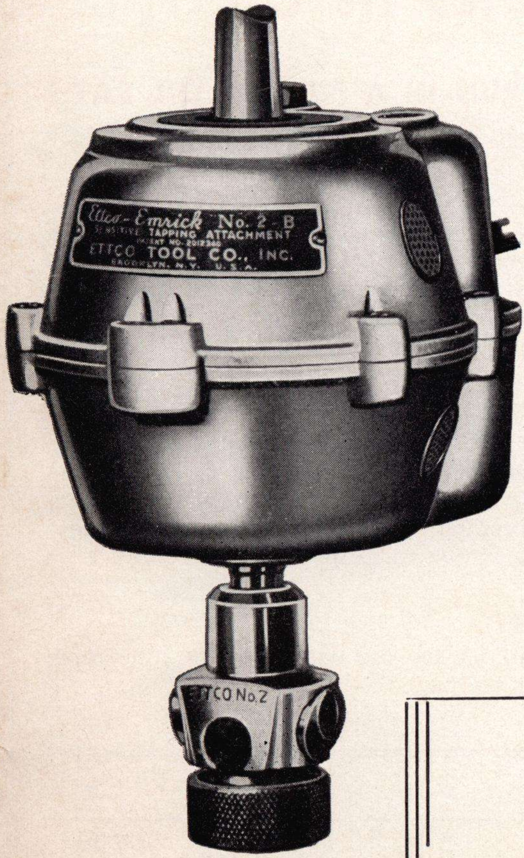
ETTCO TOOL CO., Inc.
594 JOHNSON AVENUE BROOKLYN, N. Y.

Ettco-Emrick

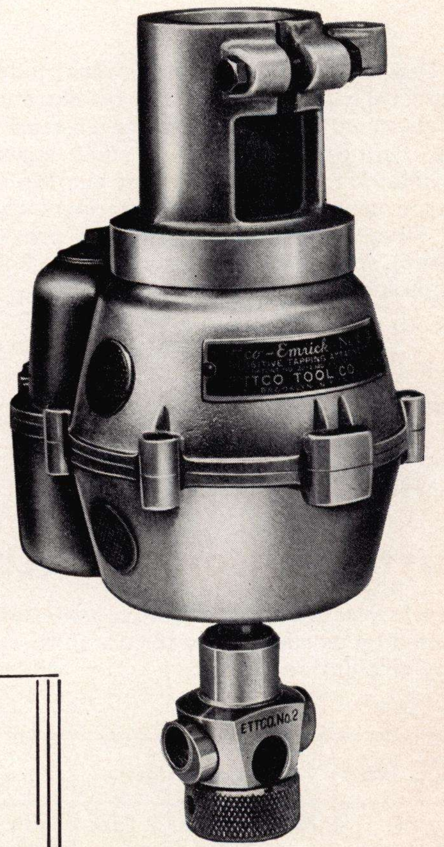
HIGH-SPEED SENSITIVE ATTACHMENTS

FOR TAPPING

FOR THREADING



ON ANY DRILL PRESS



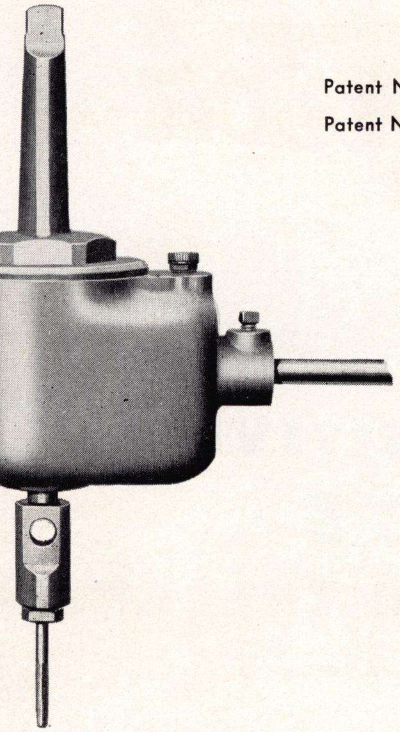
DISTRIBUTED BY

BULLETIN No. 22

No. 100 and 200

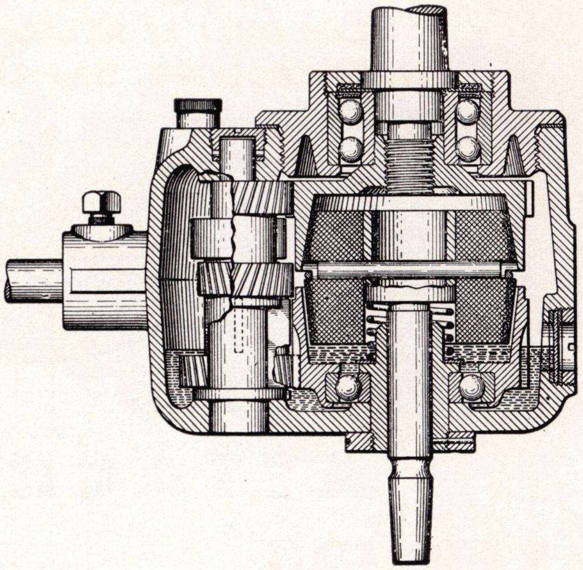
FOR SMALL TAPS

No. 0 to 10 TAPS



Patent No. 2012340

Patent No. 2035224



"IT RUNS IN OIL"

The Nos. 100 and 200 tappers meet industry's demand for precision tappers that can do extremely light work at high speed with the hair-trigger sensitivity and consistent action so necessary in small tapping. Shop men will understand, however, that the high precision and extreme sensitivity of these tappers can be obtained only when they are used in drill presses that are in accurate, sensitive working condition. Following are the outstanding features of these tappers.

BALL BEARING MAIN SPINDLE

Nitralloy shafts and leaded bronze quill gear bearings.

ALL HELICAL GEARS

ASBESTOS CARBON CONE CLUTCH

An exclusive new fricton clutch material, invented and patented by us specifically for use in these tappers, gives highly efficient and sensitive action while running in oil.

ALL PARTS RUN IN A PUMPED OIL BATH

This feature gives these tappers a surprisingly long life.

SPEEDS

These tappers are most efficient when operated at high speeds. Hence, they should always be used at the highest speed which the particular job will permit—up to the recommended maximum given below. Tapper idles in the cutting direction which results in faster action.

CAPACITY

These tappers were developed and perfected as a result of years of research and experimental work, particularly in the field. When used in accordance with recommended small tapping practice they will provide fast, accurate tapping in the range of No. 0 to No. 10 taps.

QUILL CLAMPS

Clamps are available for use with the No. 200 tapper only. For details see page 5.

SIZE No.	Capacity in Steel	Standard Tap Holding Chuck	Recommended Maximum Speed	Weight	Morse Shank †	PRICE*
100	No. 0 to No. 6 Taps	Ettco Collet Chuck	2200 R.P.M.	4 lbs.	No. 1 or 2	$60.00
200	No. 3 to No. 10 Taps	Ettco Collet Chuck	2000 R.P.M.	4½ lbs.	No. 1 or 2	$70.00

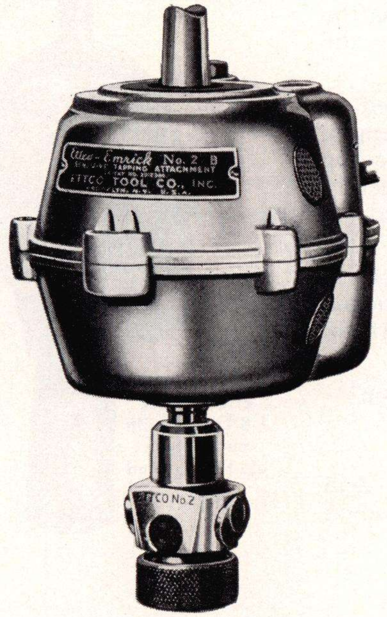
† **FEMALE ADAPTERS, in place of shanks, are stocked for standard male spindles.**

*Prices subject to change without notice.

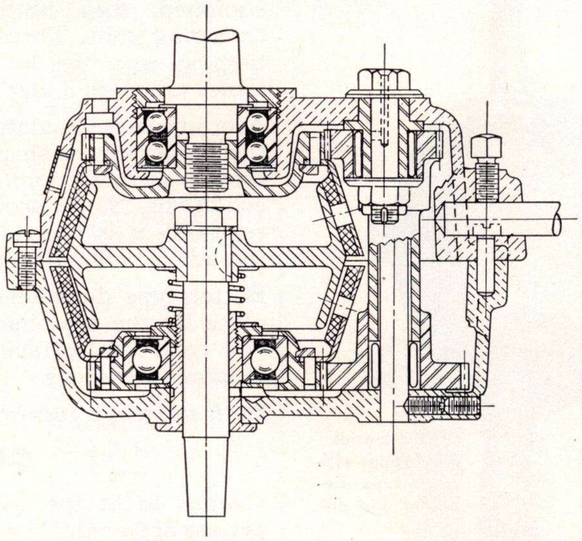
No. 1-B and 2-B

FOR MEDIUM TAPS

No. 6 to ½" TAPS



Patent No. 2012340
Other Patents Pending



"THERE IS THAT IDEAL ABOUT A DRY LEATHER CLUTCH FOR WHICH WE HAVE FOUND NO SUBSTITUTE"

These tappers are the result of over twenty-five years specialization in the development of tapping equipment. The simplicity of their design, and particularly the improved leather clutch, automatically provide the hair-trigger sensitivity needed for tapping. Following are their principal features.

BALL BEARING MAIN SPINDLE

Needle bearings on hardened and ground shafts for idler and quill gears.

ALL HELICAL GEARS

EASY LUBRICATION

Two holes, oiled daily, effectively lubricate all running parts.

NEW LEATHER-ON-ALUMINUM CLUTCH

In this important new design, shoes or segments of special leather, assembled INSIDE a cup, provide a friction surface against an aluminum cone. This construction compensates for expansion and contraction, and assures smooth, sensitive consistent action. The clutch assembly is easily removed as a unit in a matter of minutes and just as easily replaced. By simply removing the seven case screws the tapper can be taken apart for cleaning and inspection. There are no loose parts to fall out.

SPEEDS

Tapping speeds are determined by size of tap and material. The No. 1-B and 2-B tappers operate efficiently at both high or low speeds as required. Their recommended maximum operating speeds are given below.

CAPACITY

The capacities listed below are determined from experience. When used within their respective ranges, Ettco-Emrick No. 1-B and No. 2-B tappers will give years of uninterrupted and trouble-free service.

QUILL CLAMPS

Clamps to fit the quills of the different makes of drill presses are available for both the No. 1-B and No. 2-B tappers as listed on page 5.

THREADING

These tappers can be used for threading as explained on page 6.

SIZE No.	Capacity in Steel	Tap Chuck No. Capacity	Recommended Maximum Speed	Weight	Morse Shank †	PRICE*
1-B	No. 6 to ¼" Taps	Ettco 1-T (5/16")	1800 R.P.M.	5½ lbs.	No. 1 or 2	$60.00
2-B	No. 10 to ⅜" Taps	Ettco 2-T (½")	1200 R.P.M.	8½ lbs.	No. 2 or 3	$80.00

† **FEMALE ADAPTERS, in place of shanks, are stocked for standard male spindles.**

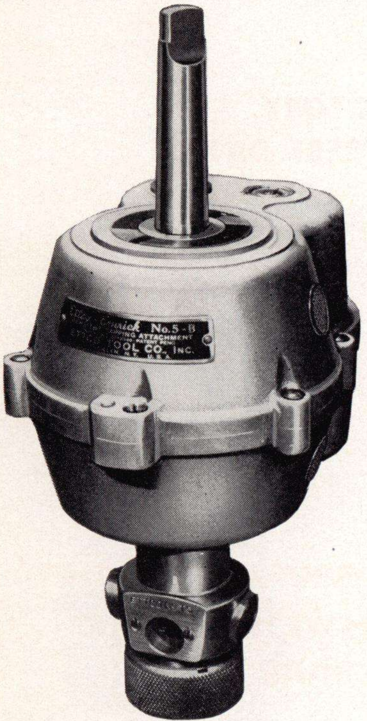
*Prices subject to change without notice.

Ettco-Emrick LEATHER CLUTCH SENSITIVE TAPPERS

No. 3-B, 4-B and 5-B

FOR LARGE TAPS

¼" to 1" TAPS



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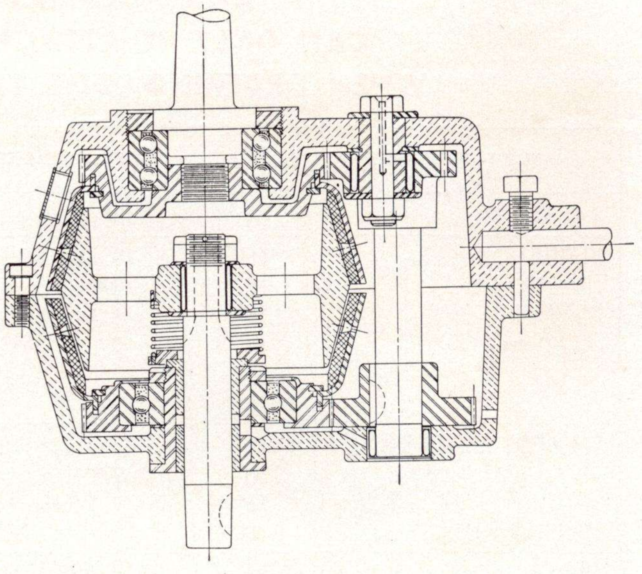


NO. 4-B and NO. 5-B TAPPERS

These tappers represent a complete redesign of the former Ettco-Emrick Nos. 4 and 5 tappers. They incorporate the proven design and principles of the latest No. 1-B and No. 2-B tappers, including the improved leather-on-aluminum clutch. Consequently, they have the same extremely sensitive control and feel as the smaller tappers. At the same time they are designed and built with the strength and ruggedness needed for high-speed tapping in the larger tap sizes. Here are their chief features.

BALL BEARING MAIN SPINDLE

A large double-row ball bearing fully capable of taking the loads of large size tapping. Needle bearings on hardened and ground shafts for the idler and quill gears. Oillite bearings on chuck spindle.

GEARING

Tough 16-pitch stub tooth spur gears made expressly for heavy duty service.

EASY LUBRICATION

Only two holes, oiled daily, provide effective lubrication for all running parts.

NO. 3-B TAPPER (not shown)

This tapper was developed for heavy tapping on small drill presses. Through a set of planetary gears located below the leather clutch, the speed at the tap end is reduced to approximately one-third of the drill press spindle speed. This gearing, in effect, adds back gears to small drill presses, providing the extra power needed for tapping at slow speed in tough material. Quill clamps are especially needed for this tapper.

QUILL CLAMPS

Clamps to fit the quills of the different makes of drill presses are listed on page 5.

THREADING

The Nos. 4-B and 5-B tappers can be used for threading as explained on page 6.

SIZE No.	Capacity in Steel	Pipe Tap Capacity	Tap Chuck No. and Capacty	Recommended Max. Speed	Taper Shank	Weight	PRICE*
3-B	¼" to ½"	⅛"	Ettco 3-T No. 10 to ⅝"	1000 R.P.M.	No. 1-2‡	11½ lb.	$115.00
4-B	¼" to ⅝"	¼"	Ettco 4-T ¼" to 11/16"	1000 R.P.M.	No. 2-3-4†	15½ lb.	$110.00
5-B	⅝" to ¾"	½"	Ettco 5-T 9/16" to 1"	1000 R.P.M.	No. 3-4	19 lb.	$130.00

‡Also available with any female (chuck taper) adapter.

*Prices subject to change without notice.

†We supply No. 2 Shank for No. 4 Tapper when ordered, but we do not recommend this and cannot be responsible for shank breakage.

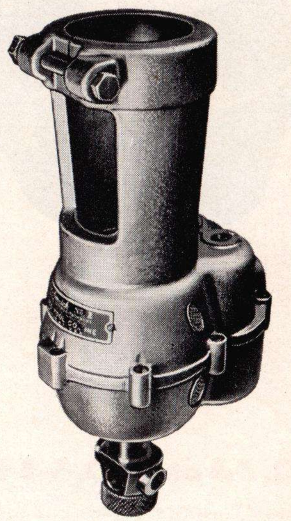
Ettco-Emrick QUILL CLAMPS

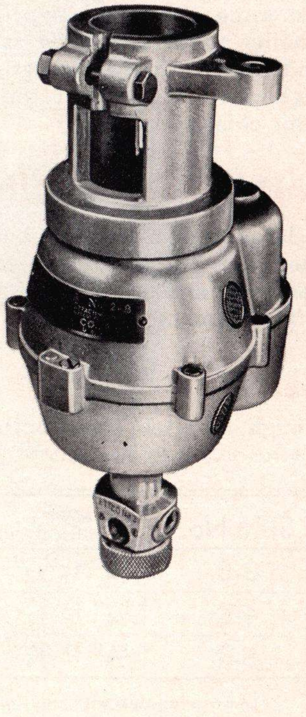
For absolute rigidity and accuracy, we recommend that Ettco-Emrick tappers be ordered with quill clamps. The quill clamps are attached to the tapper and clamp directly around the drill press quill.

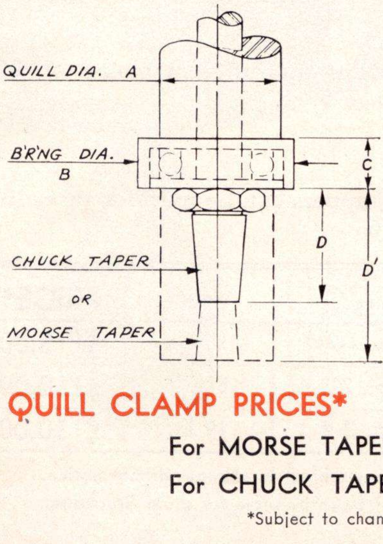
Clamps are not necessary for the No. 100 tapper unless it is used horizontally.
Refer to the table below to order the correct quill clamp with tapper for your drill press.*

QUILL CLAMPS NOT SOLD SEPARATELY.
CAN ONLY BE ATTACHED TO TAPPERS AT FACTORY.
WHEN ORDERING, GIVE TAPPER NO. AND DRILL PRESS DATA.

MAKE OF DRILL PRESS	SIZE OF DRILL PRESS	TYPE SPINDLE SOCKET	ETTCO-EMRICK QUILL CLAMP NUMBER
ATLAS	—	33 chuck taper	A-33
BUFFALO	15"	33 chuck taper	B-15-33
"	15"	2A " "	B-15-2A
"	15"	1 Morse taper	B-15-1 M.T.
"	15"	2 " "	B-15-2 M.T.
"	16"	2 " "	B-16-2 M.T.
"	18"	2 " "	B-18-2 M.T.
CANEDY-OTTO-ROYAL	16"	33 chuck taper	C.O.-16-33
" " "	16"	2A " "	C.O.-16-2A
" " "	16"	2 Morse taper	C.O.-16-2 M.T.
" " "	18"	2 " "	C.O.-18-2 M.T.
DELTA	14"	33 chuck taper	D-14-33
"	14"	1 Morse taper	D-14-1 M.T.
"	14"	2 " "	D-14-2 M.T.
"	17"	6 chuck taper	D-17-6
"	17"	33 " "	D-17-33
"	17"	2A " "	D-17-2A
"	17"	2 Morse taper	D-17-2 M.T.
LELAND-GIFFORD	#1	2A chuck taper	L-1-2A
" "	#2	2 Morse taper	L-2-2 M.T.
SOUTH BEND	14"	6 chuck taper	S-14-6
" "	14"	2 Morse taper	S-14-2 M.T.
WALKER-TURNER	15"	6 chuck taper	W.T.-15-6
" "	15"	33 " "	W.T.-15-33
" "	15"	1 Morse taper	W.T.-15-1 M.T.
" "	15"	2 " "	W.T.-15-2 M.T.
" "	20"	2 " "	W.T.-20-2 M.T.







*Note—If your drill press is not listed in the table above, please furnish us with the dimensions indicated on the diagram at the left as well as the Make, Model No., and Size of your press.

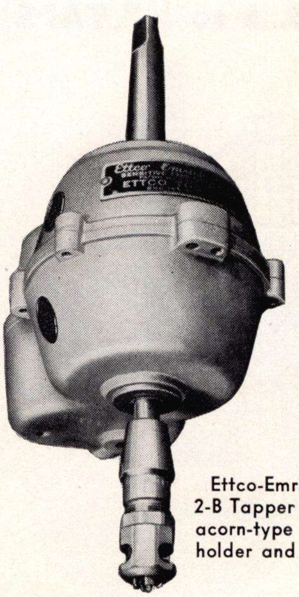
Dimension	Description
A	Quill diameter
B	Bearing diameter
C	Bearing thickness
D or D′	Length and *type* of spindle socket taper

QUILL CLAMP PRICES*

For MORSE TAPER Drill Presses	$15.00
For CHUCK TAPER Drill Presses	10.00

*Subject to change without notice.

Ettco-Emrick HIGH-SPEED, SENSITIVE THREADERS



Ettco-Emrick 2-B Tapper with acorn-type die-holder and die.

Numbers 1-B, 2-B, 3-B and 4-B Tappers can be provided with button or acorn-type die-holders and dies. Thus equipped, they become high-speed, sensitive accurate *threading* units. Threading capacities are the same as the tapping capacities listed for the respective tappers in the tables on pages 3 and 4.

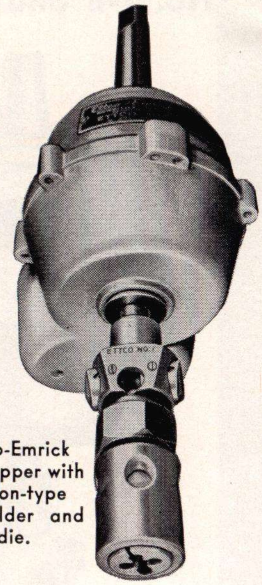
Acorn-type die-holders (shown at the left) are pressed on the tapper chuck shaft. Due to their short spindle length, they are truer running, thus making for ideal threading conditions. Since acorn-type die-holders are not readily removed, it is the rule to reserve tappers thus fitted for threading only, changing dies to suit requirements.

Button-type die-holders (shown at the right) are held in place by the tap chuck. They can be quickly unchucked and replaced by taps whenever it is desired to perform tapping operations.

Both styles are furnished from stock. Prices on request.

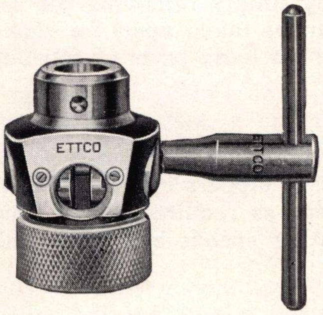
QUILL CLAMPS

Clamps to fit the quills of the different makes of drill presses are available with Ettco-Emrick tappers as listed on page 5.



Ettco-Emrick 1-B Tapper with button-type die-holder and die.

Ettco-Emrick VISIBLE GRIP TAP CHUCKS



A sensible chuck with a visible grip.

The Ettco-Emrick Visible Grip Tap Chuck accurately centers the tap on the round of the shank. The powerful floating jaws hold the tap in a firm and rigid grip which won't damage the shank and which prevents the tap from pulling out when reversing.

The chuck saves taps—it's ideal as a universal tap holder for your screw machine releasing device—use it with your quick change collets—it's fine for positively holding drills, reamers, counterbores, etc.

Chuck No.	Tap Capacity	Round Shank Capacity	Pipe Tap Capacity	Std. Taper Hole in Chuck	Largest Spec. Thd. or Taper	Weight Complete	List Price*
1-T	No. 0 to 3/8"	1/8" to 5/16"		2	5/8"	8 oz.	$8.50
2-T	No. 8 to 1/2"	1/8" to 3/8"	1/8" small shank	2	3/4"	12 oz.	9.50
3-T	No. 10 to 5/8"	3/16" to 1/2"	1/8"	3	3/4"	1 lb.	11.00
4-T	1/4" to 11/16"	1/4" to 9/16"	1/4"	No. 7 Jarno†	3/4"	1 lb.-2 oz.	12.00
5-T	9/16" to 1"	7/16" to 13/16"	1/2"	No. 8 3/4 Jarno†	1"	2 lbs.-9 oz.	18.00

* F.O.B. Factory, Bklyn., N. Y. Prices subject to change without notice. † With keyway for Woodruff key.

Chucks shipped with std. taper holes if not otherwise specified • Holes and threads not commercial standards are extra. • Adapters can be made for any spindle or tapping device. • Back of chuck can be machined for B & S or other releasing holders. • MORSE TAPER SHANKS are available for all tap chucks.

OTHER Ettco-Emrick PRODUCTS

KEYLESS, SELF-TIGHTENING DRILL CHUCKS • AIR-FOOT-OPERATED TAPPING MACHINES
ADJUSTABLE SPINDLE AND FIXED-CENTER MULTIPLE DRILLING AND TAPPING HEADS
ELECTRIC-AIR OPERATED DRILLING AND TAPPING MACHINES • ELECTRIC INDEXING FIXTURES

ETTCO TOOL CO., INC.
594 Johnson Avenue, Brooklyn 6, N. Y.
Boston, Mass. • Middletown, Conn. • Detroit, Mich. • Chicago, Ill. • Swarthmore (Phila.) Pa.
Dealers throughout the United States

20M-1/51

Printed in U.S.A.

New

HAND-OPERATED Ettco-Emrick SELF-TIGHTENING

KEYLESS

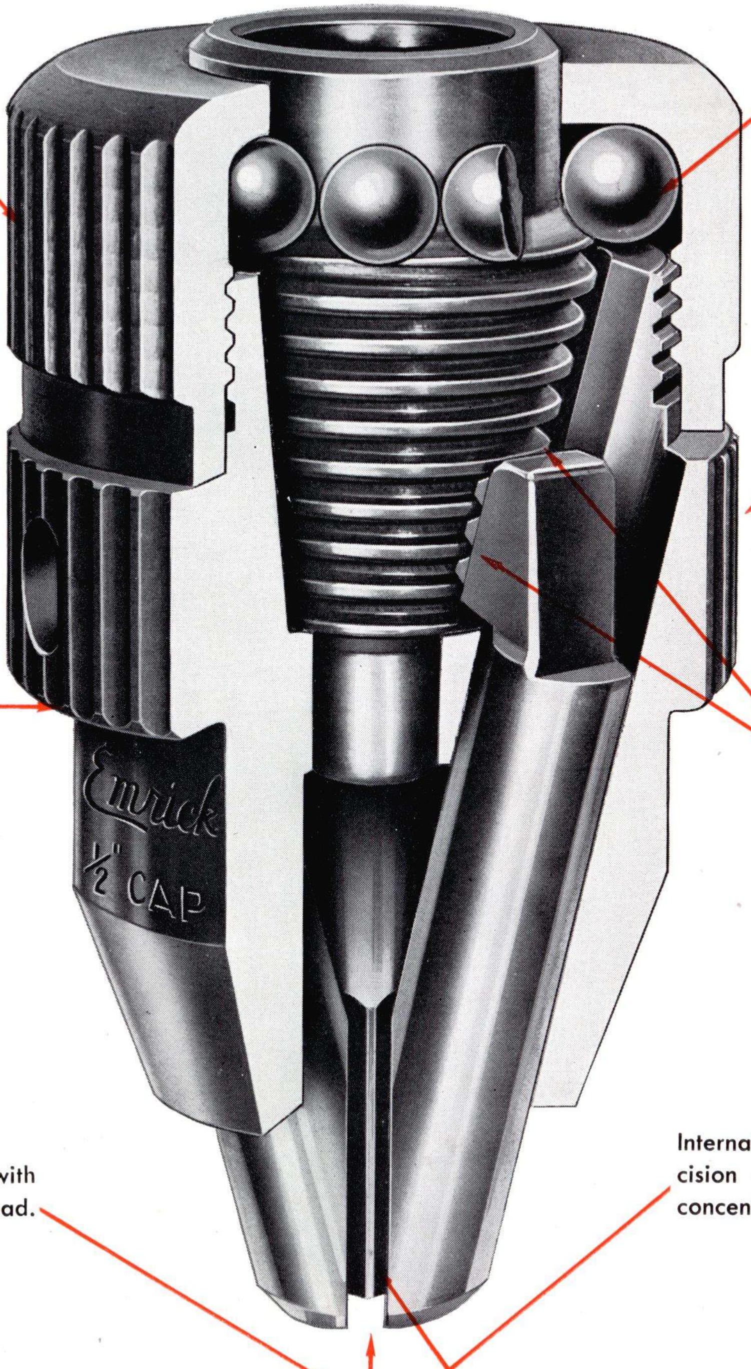
BALL BEARING DRILL CHUCKS

DISTRIBUTED BY

BULLETIN No. 7

Ettco-Emrick BALL BEARING

UNCONDITIONAL GUARANTEE FOR WORKMANSHIP, MATERIAL AND PERFORMANCE



Durability with high degree of accuracy under heavy load as well as on precision work.

Large ball bearing thrust support with self-centering construction.

Keyless gripping eliminates safety hazards.

Rapidity and ease in gripping and releasing operation.

All wearing surfaces hardened to a high Rockwell reading to resist wear.

Tremendous in gripping power with automatic tightening under load.

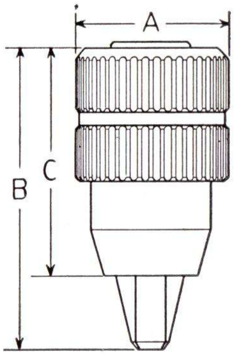
Internal surfaces of jaws precision ground in assembly for concentricity.

Its simple design consists of a cone-shaped screw, directly actuating three gripping jaws. It will tighten and center itself by the action of drilling. The jaws are keyed in the body—the screw does not take the jaw torsional strain—it only moves them up and down. This is the reason for the success of this chuck.

KEYLESS DRILL CHUCKS

SPECIFICATIONS

Capacity	Chuck No.	Taper or Thread	List Price
1/4″	10	B & D-30 Taper (Standard)	$ 6.50
	10A	Threaded 5/16″—24	6.50
	10B	Threaded 3/8″—24	6.50
	10C	Threaded 1/2″—20	6.50
	10D	1A Taper	6.50
3/8″	30	2A Taper (Standard)	$ 8.00
	30D	B & D—30 Taper	8.00
	30E	Threaded 1/2″—20	8.00
	30F	Threaded 5/8″—16	8.00
1/2″	40	3A Taper (Standard)	$10.50
	40E	Threaded 1/2″—20	10.50
	40F	Threaded 5/8″—16	10.50
	40G	Threaded 45/64″—16	10.50
	40H	Threaded 3/4″—16	10.50
	40K	Special B & D-E Taper	10.50
	40L	6A Taper	10.50
	40M	33 Taper	10.50
5/8″	50	3A Taper (Standard)	$12.50
	50F	Threaded 5/8″—16	12.50
	50G	Threaded 45/64″—16	12.50
	50H	Threaded 3/4″—16	12.50
	50K	Special B & D-E Taper	12.50
	50L	6A Taper	12.50
	50M	33 Taper	12.50



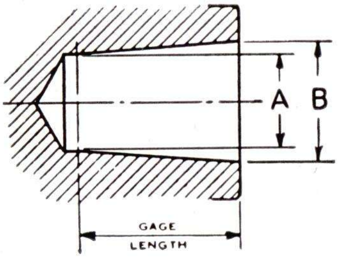
SIZES AND DIMENSIONS

Chuck No.	Capacity	Standard Taper	Weight	A	B	C
10	0 to 1/4	No. 30	0 lb.—8 oz.	1-5/16″	2-1/2″	1-7/8″
30	0 to 3/8	No. 2A	1 lb.—3 oz.	1-3/4″	3-1/2″	2-9/16″
40	0 to 1/2	No. 3A	2 lb.—8 oz.	2-1/4″	4-3/8″	3-3/8″
50	1/8 to 5/8	No. 3A	2 lb.—8 oz.	2-1/4″	4-3/8″	3-3/8″

All chucks take 1/64″ oversize

Ettco-Emrick Drill Chucks are stocked to fit all makes of Electric Drills

DIMENSIONS OF STANDARD TAPER HOLES



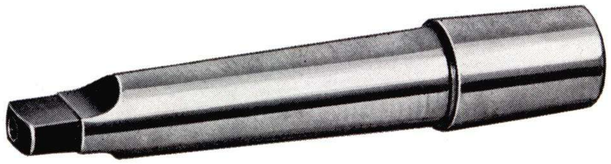
Taper No.	Large Dia. B	Small Dia. A	Gage Length
1A	.384	.333	.659
30	.549	.487	.750
2A	.560	.487	.880
33	.625	.562	1.000
6A	.676	.626	1.000
3A	.811	.746	1.218
B & D-E	.790	.748	.812

Ettco-Emrick

BALL BEARING KEYLESS DRILL CHUCKS

SHANKS

Ettco-Emrick Taper and Straight Shanks are made of 1045 steel, heat-treated and accurately ground to fit OUR chucks.



MORSE TAPER ARBORS

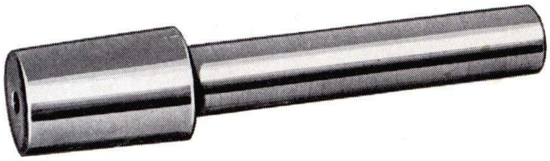
Taper No.		List Price
1	For No. 10 to No. 30 Chucks	$ 1.20
2	For No. 10 to No. 50 Chucks	1.20
3	For No. 30 to No. 50 Chucks	1.80
4	For No. 30 to No. 50 Chucks	2.60

BROWN & SHARPE TAPER ARBORS

7	For No. 30 to No. 50 Chucks	2.60
8	For No. 30 to No. 50 Chucks	3.60
9	For No. 30 to No. 50 Chucks	6.00
10	For No. 30 to No. 50 Chucks	7.00

STRAIGHT SHANK ARBORS

1/2 or 5/8 x 2-1/2	$ 1.20
3/4 or 1 x 3	1.80
1-1/4 or 1-1/2 x 4	3.40



Always give Chuck Number when ordering shanks. Only shanks to fit taper of chucks as noted in price list are stocked.

OTHER Ettco-Emrick PRODUCTS

HIGH-SPEED, SENSITIVE TAPPING ATTACHMENTS • VISIBLE GRIP TAP CHUCKS • ELECTRIC INDEXING FIXTURES
AIR OR FOOT OPERATED TAPPING MACHINES • ELECTRIC-AIR MACHINES FOR DRILLING AND TAPPING
ADJUSTABLE SPINDLE AND FIXED CENTER MULTIPLE DRILLING OR TAPPING HEADS WITH WORK HOLDERS
SPECIAL DRILLING AND TAPPING EQUIPMENT

Descriptive Bulletins on Request

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Swarthmore (Phila.), Pa. • Worcester, Mass. • Detroit, Mich. • Chicago, Ill.

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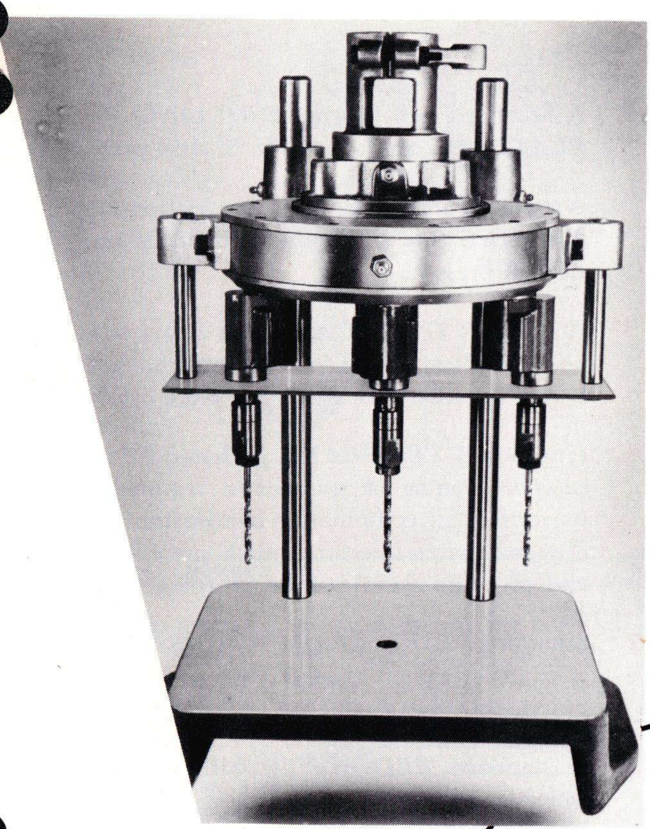
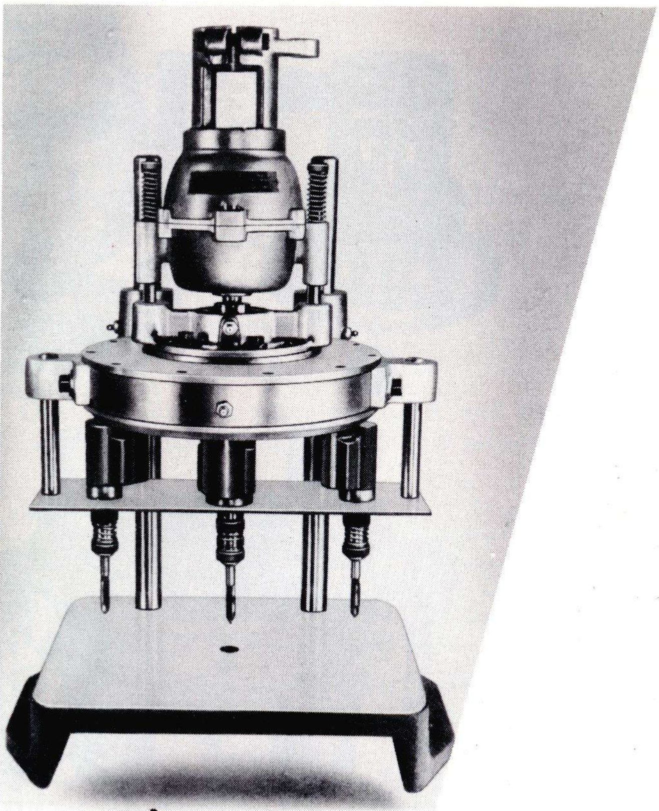
15M—6/51

DRILL AND TAP





WITH THE *Improved* CONVERTIBLE

Ettco-Emrick

Adjustable Spindle

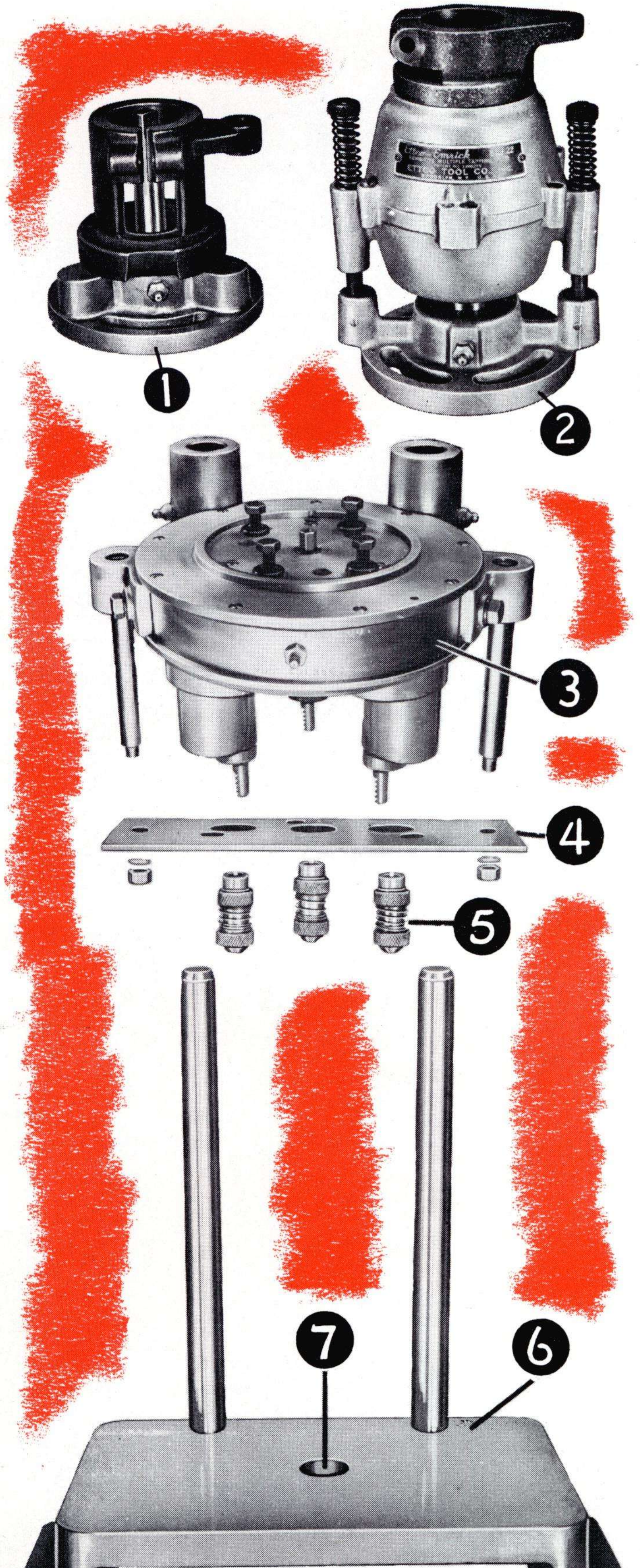
PATENTS PENDING

MULTIPLE HEADS

DISTRIBUTED BY

BULLETIN No. 35

COMPONENTS OF Ettco-Emrick CONVERTIBLE MULTIPLE HEAD UNITS



1. A standard ball-bearing *DRILLING FACE PLATE* with quill clamp to fit drill press.
2. A standard high-speed, sensitive friction-clutch *TAPPING FACE PLATE* with quill clamp to fit drill press.
3. A standard *GEAR CASE* with 2 to 4 *adjustable* spindles, which can be interchangeably bolted to either face plate. See Note below.
4. A standard *TEMPLATE,* jig bored for accurate positioning of spindles in required hole locations. The combination of adjustable spindles and template assures quick, precise set-up and prevents spindles from creeping.
5. Standard *DRILL* or *TAP CHUCKS* in 3 types, specially designed to meet your particular requirements. See Page 4.
6. A standard *BED PLATE* with guide rods which engage bushings on the gear case, and including provisions for accurate mounting of work holders.
7. An Ettco-Emrick engineered *WORK HOLDER* designed for fast, easy loading and unloading of parts. Its design and construction simplify accurate mounting and easy removal from bed plate.

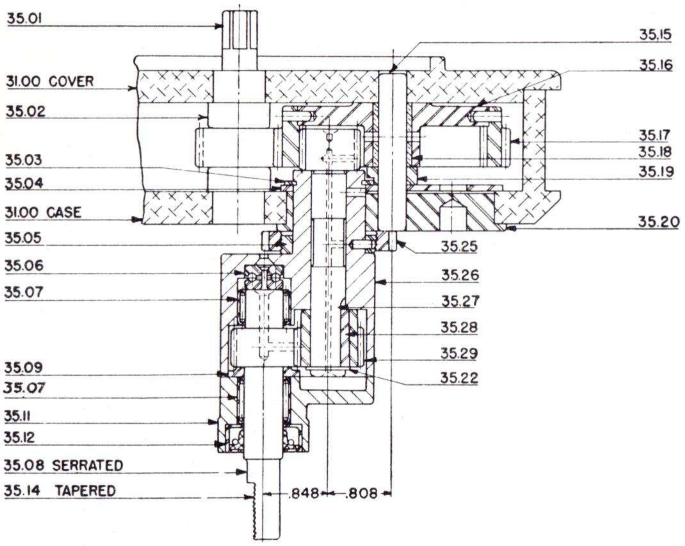
UNIT TIE-UP

Note that components are tied together like a punch and die, always maintaining inbuilt accuracy and line-up. Set-up and take-down on your drill press is a matter of a few bolts.

NOTE — EXCLUSIVE FEATURE

The feature of a multiple spindle gear case which can be interchangeably bolted to a standard drilling and a standard tapping face plate is a patented Ettco-Emrick development. It permits you to change over from drilling to tapping or back in a matter of minutes. As compared with the old single spindle method, this Ettco-Emrick System of convertible adjustable spindle heads represents a tremendous advance in production speed and economy on small parts drilling and tapping.

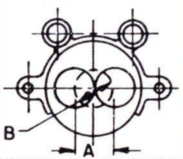
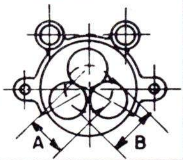
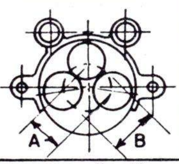
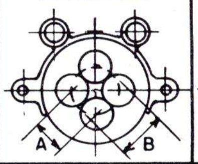
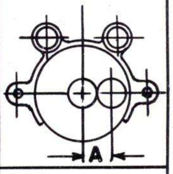
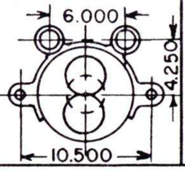
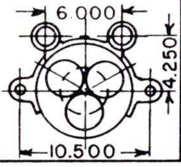
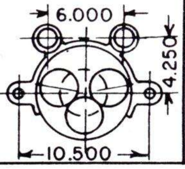
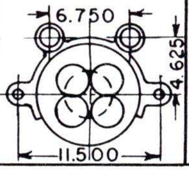
ADJUSTABLE SPINDLE CONSTRUCTION



MAIN FEATURES

	Part No.
- Ball bearing end thrusts	35.06
- Needle bearings on spindles	35.07
- Serrated or 1A taper chrome nickel spindles	35.08-35.14
- One locking nut clamps spindle	35.25
- One Point lubricating system	
- Light weight aluminum gear case	
- Gear ratio—1 to 1.5 Approx.	
- Quality materials, close-tolerance, and rugged proportions assure long trouble-free service.	

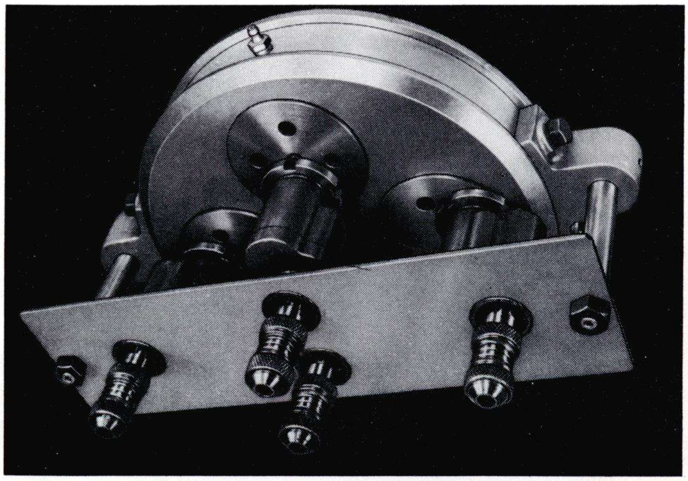
WORKING CAPACITIES AND DIMENSIONS

MODEL NUMBER	2-35	3-35	3-35	4-35	DRILLING ONLY 1-35
	2 SPINDLES	3 SPINDLES "A"	3 SPINDLES "B"	4 SPINDLES	2 SPINDLES
SINGLE SPINDLE CAN BE LOCATED AT ANY POINT WITHIN A 3 5/16 DIAMETER CIRCLE					1 FIXED 1 ADJUSTABLE
DRILL CAPACITY - WIRE SIZES TO 3/8 IN STEEL					
TAP CAPACITY - NUMBER SIZES TO 5/16 IN STEEL					
(A) MIN. CENTER DIAMETER STRAIGHT LINE	1 3/16	1 3/16 (2 SPD.)	1 5/16	1 3/16 (BET. 3 SPD.)	1 3/16
MAX. CENTER DIAMETER STRAIGHT LINE	7 5/8	7 1/32 (2 SPD.)	3 23/32 BET. SPD.	3 7/8 (BET. 3 SPD.)	3 13/16
(B) MINIMUM BOLT CIRCLE	1 3/16	1 3/8	1 3/8	1 11/16	
MAXIMUM BOLT CIRCLE	7 5/8	7 5/8	6 1/2 equally spaced	8 3/16	3 13/16
OVERALL DIMENSIONS — (from bottom of drill press spindle to bottom of chucks) DRILLING UNIT ---------- 9 13/32 TAPPING UNIT #22 Light duty head ---- 14 7/32 #44 Medium duty head -- 14 21/32 #55 Heavy duty head --- 14 27/32	STYLE "A" 	STYLE "A1" 	STYLE "B1" 	STYLE "A" 	
When ordering, please specify style, and number of spindles required. Other spindle arrangements furnished to order.	STYLE "B" 	STYLE "A2" 	STYLE "B2" 	STYLE "B" 	

SPINDLE ADJUSTMENT

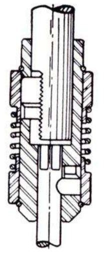
The template method makes it a simple matter to locate spindles accurately for a given hole combination and to change their location from one drilling or tapping job to another. After templates are mounted, the spindle locking nuts are tightened. This locks the spindle housings and clamps them against bottom of gear case, assuring squareness. In addition, the spindles are held securely in position by the template.

At the right is a four-spindle gear case with template mounted in position ready for drilling or tapping. We are prepared to render prompt service on jig boring templates to your requirements.



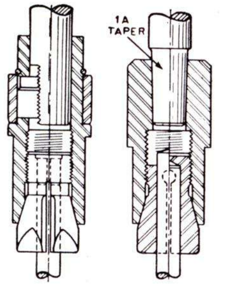
STANDARD TAP AND DRILL CHUCKS

FOR *Ettco-Emrick* MULTIPLE HEADS



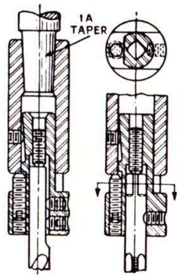
No. 4100
VERTICAL
ADJUSTABLE TAP CHUCKS

These chucks provide vertical adjustment on a serrated spindle. They also float the tap. Stock sizes for No. 6 to 3/8″ taps.



No. 4200
COLLET TYPE
DRILL OR TAP CHUCKS

These chucks fit either serrated spindles where non-rigid mounting with vertical adjustment is required, or 1A taper spindles for rigid mounting without vertical adjustment. Stock sizes for No. 6 to 5/16″ taps and for No. 60 to 5/16″ drills.



No. 5300
ADJUSTABLE-DEPTH
DRILL OR TAP CHUCKS

These chucks are used only on spindles with 1A taper. They provide rigid mounting with vertical adjustment. Stock sizes for No. 6 to 5/16″ taps and for No. 60 to 5/16″ drills.

QUOTATIONS FURNISHED WITHOUT OBLIGATION

We will be glad to quote on Adjustable Multiple Heads and Work Holders for your small parts drilling and tapping. When requesting a quotation send us the following:

1. A DRAWING GIVING DIMENSIONS OF THE PART—If this is not available, a sample of the part to be drilled or tapped.
2. FULL DETAILS OF JOB—including size and depth of holes—center distances with tolerances—drill and tap data—material of which part is made, etc.
3. PRODUCTION REQUIREMENTS. This has a bearing on the type and design of work holder. We want to keep fixtures as simple as possible.
4. DRILL PRESS DATA—The name of manufacturer and model number of the drill press on which the multiple head is to be used.

OTHER *Ettco-Emrick* PRODUCTS

KEYLESS, SELF-TIGHTENING DRILL CHUCKS • VISIBLE GRIP TAP CHUCKS
HIGH-SPEED, SENSITIVE TAPPING ATTACHMENTS
FOOT OPERATED TAPPING MACHINES
ELECTRIC INDEXING FIXTURES
FIXED-CENTER MULTIPLE DRILLING OR TAPPING HEADS
ELECTRIC-AIR MACHINES FOR DRILLING AND TAPPING

Descriptive Bulletins on Request

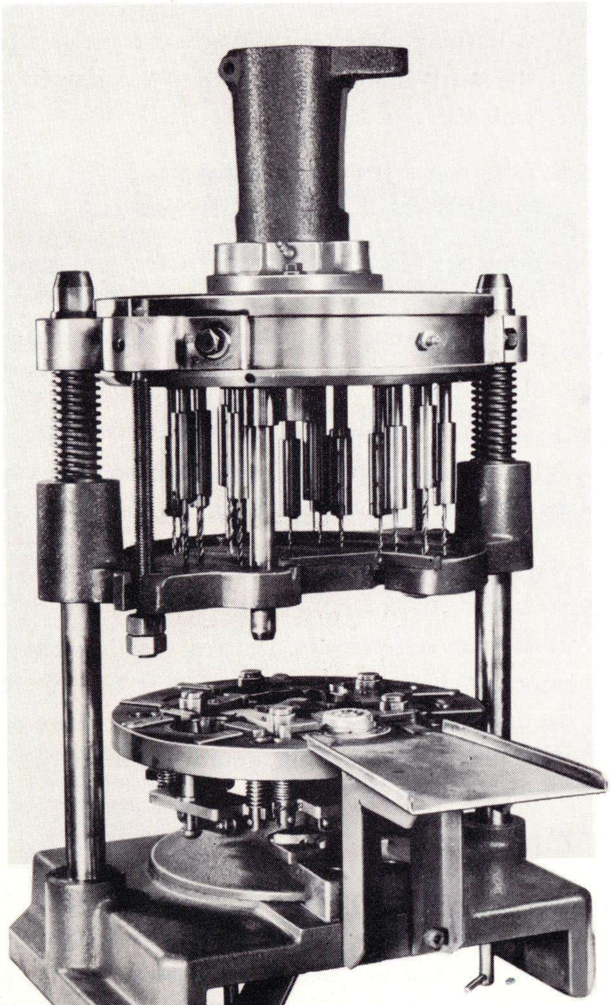
ETTCO TOOL CO., INC.

594 Johnson Avenue, Brooklyn 37 N. Y.
Boston, Mass. • Middletown, Conn. • Detroit, Mich. • Chicago, Ill.

Printed in U.S.A.
10M - 3/52

BULLETIN No. 3

THE Ettco-Emrick SYSTEM for fast, low-cost MULTIPLE DRILLING AND TAPPING OF *Small Parts*



Typical Ettco-Emrick Multiple Spindle Head and Fixture Unit ready for mounting on the drill press. This one is a drilling unit, using the "Indexing Fixture" method which turns out a complete piece at every stroke of the press. Operator just feeds—parts are automatically positioned, clamped and ejected.

This System is the result of 30 years specialization in developing drilling and tapping methods and equipment. In speed and economy it represents a tremendous advance over the old single spindle method. It covers a wide range of small parts shapes and hole requirements.

The System is founded on the fact that the *method of handling* any given part for drilling or tapping is as important in getting fast production as the *use of multiple spindles*. That's why the System provides—not just a multiple spindle head—but a complete integrated unit, including a work holding fixture designed to make the feeding and drilling or tapping of the particular part, a quick, easy operation.

Because the head and fixture units are made primarily of standardized parts and are used on standard drill presses, their initial cost is moderate. And this cost is only a temporary outlay. It is paid back in a hurry by the big increase in production and big savings in labor. That's why hundreds of firms—including most of the big fellows—now use the Ettco-Emrick System as a matter of course where small parts must be drilled or tapped in quantity.

ETTCO TOOL CO., Inc.

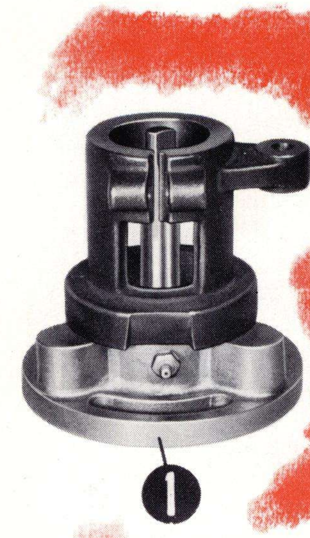
594 Johnson Ave., Brooklyn 6, N. Y.

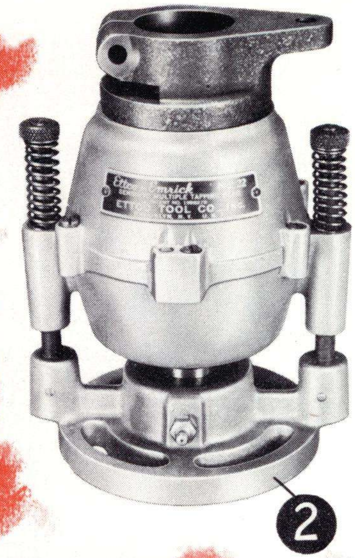
CHICAGO 6
605 W. Washington Blvd.

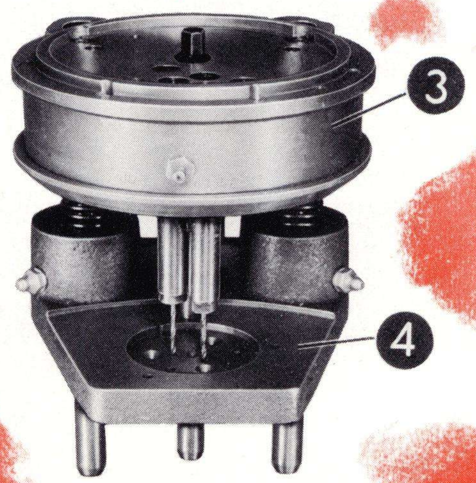
DETROIT 1
203 Convention Hall

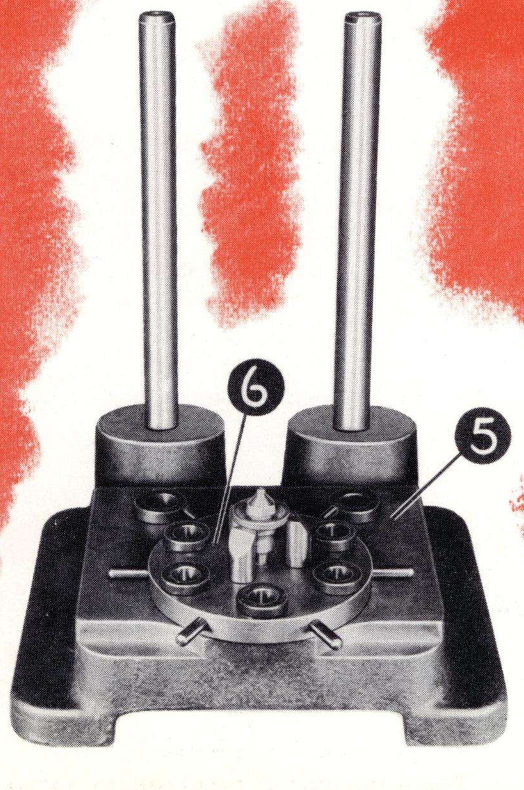
Worcester, Mass. • Swarthmore (Phila.), Pa.
Dealers throughout the United States and Canada

COMPONENTS OF THE Ettco-Emrick SYSTEM









All Ettco-Emrick System multiple drilling and tapping units are made up of the basic components illustrated. All but the work holders are standardized interchangeable parts. The work holder design depends on the shape and size, the number and spacing of the holes and the production requirements of the particular part.

1. A standard ball-bearing drilling face plate with clamp to fit the drill press quill.
2. A standard high-speed sensitive friction clutch tapping face plate with quill clamp.
3. A standard gear case with accessories, jig bored and assembled to requirements and interchangeably bolted to either face plate.
4. A bushing plate for drilling, either as part of the work holder, or working in conjunction with the gear case.
5. A standard bed plate with guide rods engaging bushings attached to the gear case.
6. An Emrick-engineered work holder, jig or fixture, with provisions for quick feeding, automatic location and clamping of parts, and whenever possible, automatic ejection. This is fastened to the bed plate.

A large proportion of the multiple head parts can be salvaged and used on heads for other jobs.

UNIT TIE-UP

Note that components are tied together like a punch and die, always maintaining the inbuilt accuracy and line-up. Set-up and take-down on your drill press is simply a matter of a few bolts.

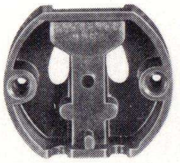
CAPACITY

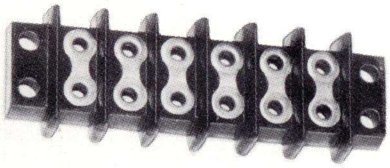
The capacity of the Ettco-Emrick System covers a limitless variety of small parts requiring holes in the range of wire sizes to 5/8″ in steel. The number of holes that can be handled is governed by the material, hole sizes and center distances. Design of units depends to a large extent on your production requirements. We can best determine this from a study of your job.

TYPICAL Ettco-Emrick MULTIPLE SPINDLE METHODS

As stated on page 1, the *method of handling* a given small part for drilling or tapping is as big a factor as multiple spindles in getting fast, low-cost production. The Ettco-Emrick System includes dozens of different handling methods. They extend from the simple "slide-in" fixture method to full automatic electric-air operation. Selection of the method for handling a given part depends on the part's shape and size, the number and spacing of the holes and the *production required*. Production requirements are particularly important from the standpoint of tooling costs, because Ettco engineers always select the simplest method that will do the job. The more generally used methods are described on this and the next page.

SLIDE-IN FIXTURE METHOD



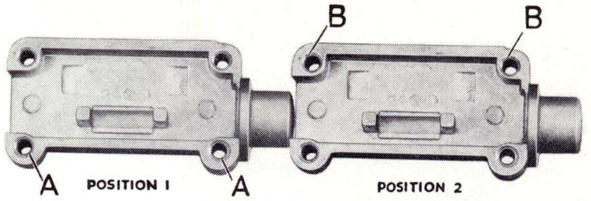


In this method the operator simply slides a part into the work holder. As the head is brought down a locator rod positions the part precisely for the drilling or tapping. Operator then slides in a new part, pushing the finished part out. Production flows along steadily. Typical parts suited for this method are shown. 2 holes are tapped in the left one—12 holes in the one at right.

LAY-IN FIXTURE METHOD

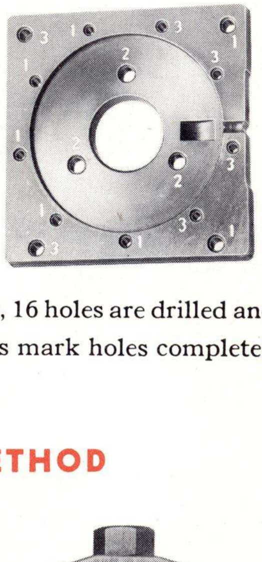
In this method the work is laid in a nest in the work holder fastened to the base plate. For drilling, the unit is generally supplied with a bushing plate, attached through springs to the gear case (page 2). As the head is brought down, a locating rod accurately positions the part and the plate clamps it. Production is limited only by how fast the operator can feed. The part shown, in which 2 holes are drilled, is typical of hundreds that are suited for this method.

WORKING ON CLOSE CENTERS



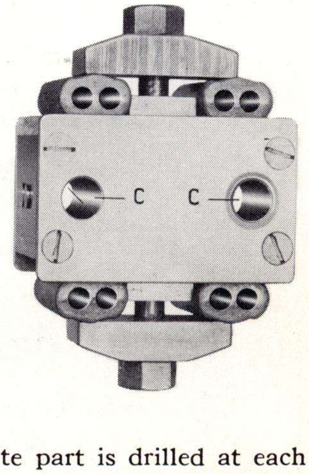
This small aluminum casting is a good example of the double-feed method and how it solves the problem of close centers. Two parts are worked on at a time in a 2-position fixture. Holes AA are drilled or tapped in position 1 and BB in position 2. Parts are fed in at left, moving part in position 1 to position 2 and ejecting part from position 2. Note that a part with all 4 holes completed comes out at every stroke of the press.

SLIDING TABLE FIXTURE METHOD



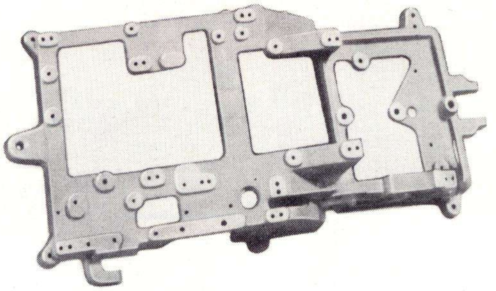
In this method the fixture has a table which is moved horizontally from one position to another at each of which some work is done. Parts are simply placed on the table. They are automatically located, clamped and released. In the part shown, 16 holes are drilled and tapped in 3 positions. Numbers mark holes completed at each position.

MAGAZINE FEED METHOD



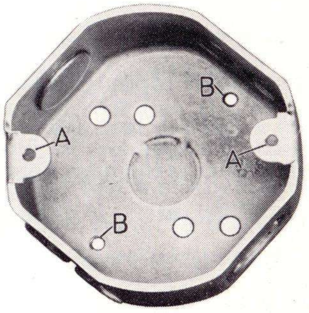
Parts are placed in a separate magazine which fits in a cradle on the base plate. Above is a magazine with 4 parts, each 2⅜" long. 4 holes are drilled, one in each part. As the head comes down, locator rods engage holes CC assuring accurate alignment. Magazine is then turned 180° and the 4 other holes are drilled. Note that the equivalent of a complete part is drilled at each stroke of the press. Using 2 magazines, one loading while the other is on the press, keeps production moving.

PROGRESSIVE DRILLING OR TAPPING



In this method two or more heads are used on a gang drill, the part being moved progressively from one to another. In the part above, 35 holes are drilled and tapped with a set-up of 5 heads in line. The part is placed in a sliding carriage which is moved from station to station and is automatically positioned at each station by locator rods. All 35 holes are completed in one pass through the 5 stations.

AUTOMATIC ELECTRIC-AIR OPERATION



Where high production is needed Ettco-Emrick multiple drilling and tapping units can be supplied with automatic electric-air operation. In the outlet box above, 4 holes AA and BB are tapped simultaneously in 2 boxes at a time. Operator places boxes 2 abreast in a chute. From there on it's all automatic. Production is 3,200 boxes—12,800 holes—tapped per hour.

FOR COMPLETE INFORMATION about the foregoing examples and the units on which they are handled, send for *BULLETIN No. 31*. It also shows additional examples of high production, cost reducing drilling and tapping with Ettco-Emrick Multiple Spindle Units.

HOW TO PUT THE *Ettco-Emrick* SYSTEM TO WORK ON YOUR SMALL PARTS

1. You send us a sample or drawing of the piece which is to be multiple drilled or tapped. An actual sample part is a great help and should be submitted if possible.

2. With the sample or drawing, give us full details of the job—including size and depth of holes—center distances with required tolerances—drill and tap data, etc. Also your production requirements because this has a bearing on the type and design of the work holding fixture. We want to keep fixtures as simple as possible.

3. You give us also, details of the drill press on which the Multiple Drilling or Tapping Units will be used. The name of the manufacturer and model number of the machine will usually be sufficient.

4. We determine the best way to handle the job to give you the required production, including the work holding fixture design. All this is submitted to you in form of a quotation.

5. With your approval, we make up the Multiple Head or Heads as may be required. We will also manufacture the work holding fixture or, if you prefer, will furnish assembly drawings of the fixture for your own manufacture.

OTHER *Ettco-Emrick* PRODUCTS

HIGH-SPEED, SENSITIVE TAPPING ATTACHMENTS • VISIBLE GRIP TAP CHUCKS • ELECTRIC INDEXING FIXTURES
FOOT-OPERATED TAPPING MACHINES • ELECTRIC-AIR MACHINES FOR DRILLING AND TAPPING
ADJUSTABLE SPINDLE AND FIXED CENTER MULTIPLE DRILLING OR TAPPING HEADS WITH WORK HOLDERS
SPECIAL DRILLING AND TAPPING EQUIPMENT

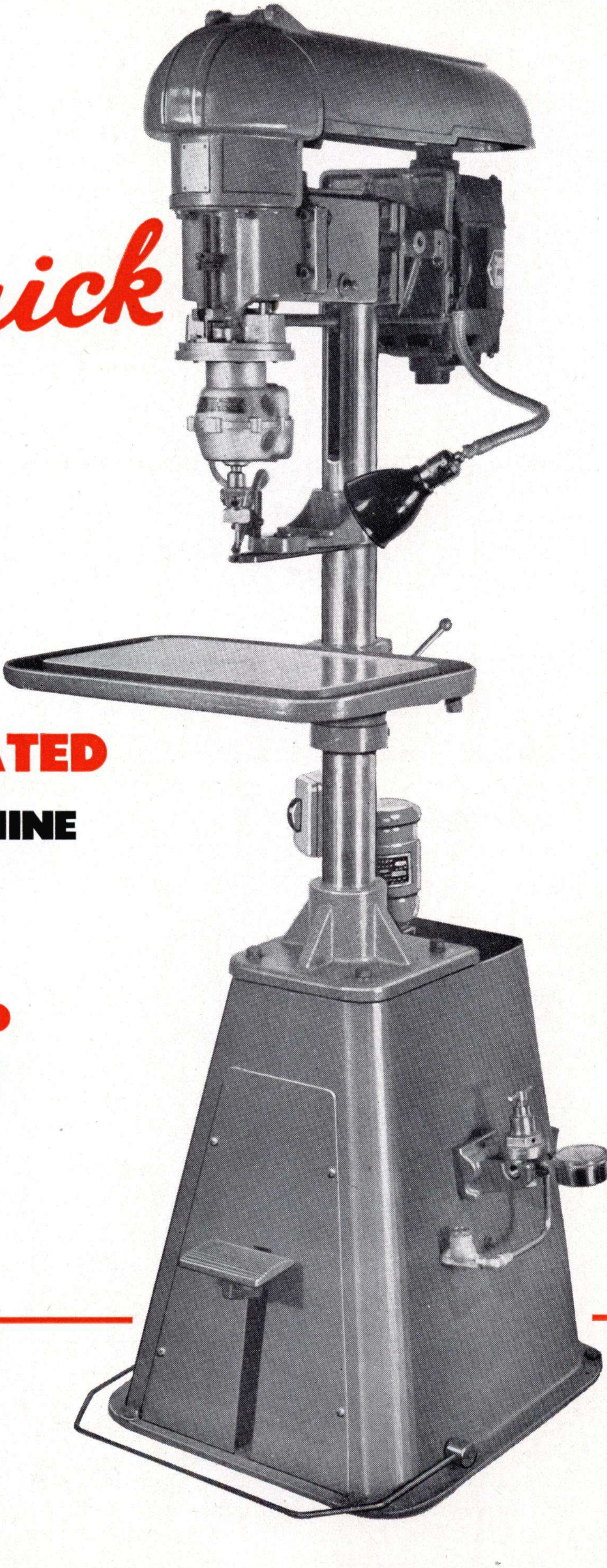
Descriptive Bulletins sent on request

10M—6-51

Printed in U.S.A.

New

Ettco-Emrick



FOOT OR AIR OPERATED

NO. 72A TAPPING MACHINE

FOR

SENSITIVE HIGH-SPEED
SINGLE OR MULTIPLE
TAPPING

DISTRIBUTED BY

BULLETIN NO. 72A

ONLY Ettco-Emrick OFFERS THESE 5 GREAT TAPPING ADVANTAGES

1. A specially designed sensitive tapping machine that can be operated by using either foot or air pressure, thereby giving the operator the use of both hands.

2. Interchangeable single spindle tapping units and multiple heads allow quick changeover from one production job to another.

3. Two oil tanks, one cast in head of machine, using gravity feed for minimum tap lubrication, and another in the base for jobs requiring a pumped oil bath.

4. No skill or delicate touch required. The operator merely presses down on the foot treadle or air release pedal. Built-in tapping action takes place from there on.

5. Its low cost and economical performance now puts a high productive tapping machine within the easy reach of all cost-conscious and production-minded manufacturers.

THE Ettco-Emrick NO. 72A TAPPING MACHINE

This highly versatile air or foot operated tapping machine has the rigid construction and sensitivity necessary for fast, accurate tapping of small parts. The unusually wide choice of tapping equipment mentioned below makes the #72A Machine most flexible.

This machine is not a drill press adapted to tapping. It is a specially designed combination foot or air operated tapping machine built for the economical use of either multiple or single spindle tapping.

TAPPING HEADS. Five sizes of Ettco-Emrick tapping attachments and completely standardized Ettco-Emrick multiple head systems with work holders are available to fit this machine. (See page 4)

SPINDLE is mounted on its own grease-sealed ball bearings and has no thrust loads. A four-step V-pulley driven by a guarded belt allows the speed of the spindle to be changed to suit the tapping requirements.

FACE PLATE. Two hardened and ground rods are pressed into the face plate. These rods are guided by four hardened and ground bushings pressed into the cast iron head to give the face plate rigidity in its up-and-down motion. The vertical movement on the face plate is controlled by the foot treadle or air cylinder.

LUBRICATION. Two tap lubricating systems. One oil reservoir is cast in head to supply lubricant by controlled gravity feed to the tap through sight glass, flexible tube, and brush. The other reservoir is a large tank built in base for use with oil pump when steady flow of oil is required.

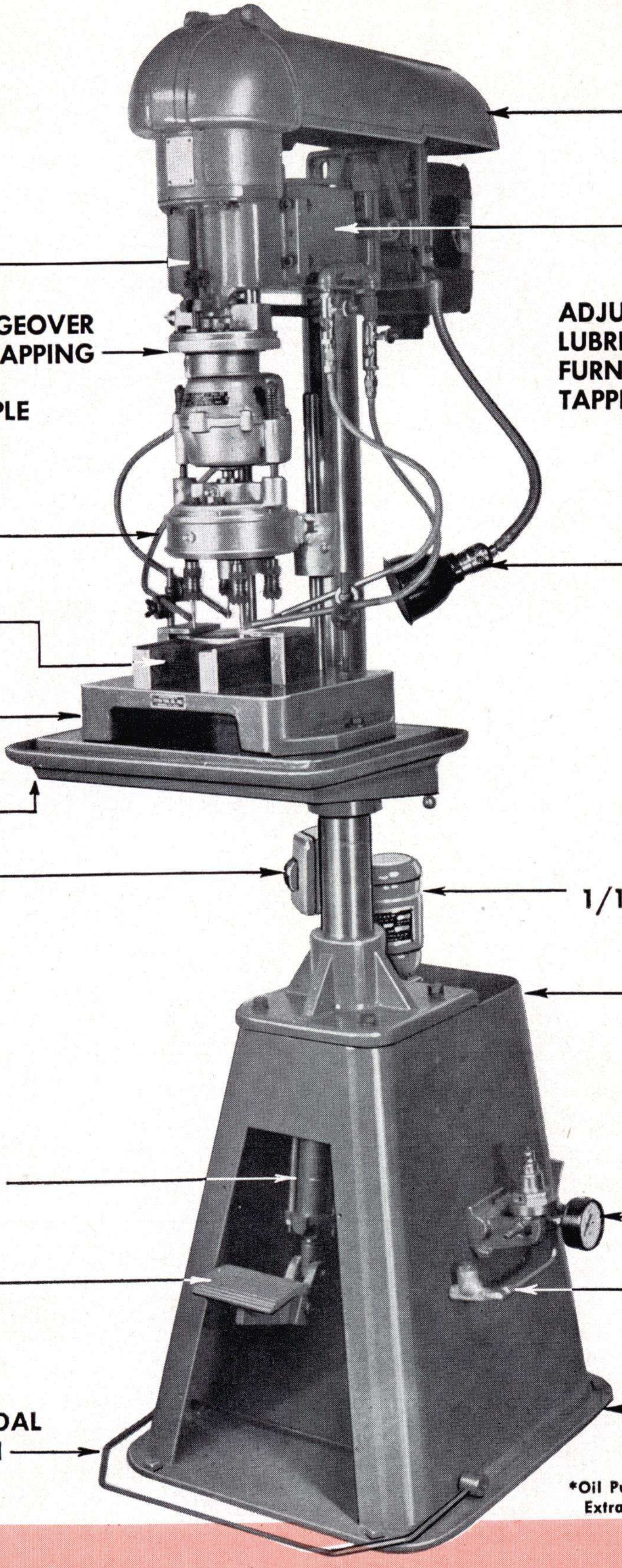
BUILT-IN STRIPPER permits the use of simple work holders because it prevents the work from lifting off the table when the tap goes in reverse. It also holds the lubricating tube and brush.

MOVABLE GROUND TABLE has oversize oil trough and drain hole.

ADJUSTABLE PULL SPRING, inside the centerless ground column, connects the face plate to the foot treadle. When the foot treadle is pressed down by foot or air, the pull spring feeds the tap into the work and gives automatic protection against tap breakage and work spoilage.

FOOT TREADLE, mounted on ball bearings within the welded steel base, has adjustable balance weights. These weights are used to back the tap out of the work and return it to its neutral or "up" position. They also serve as a sensitive counterbalance, reducing to a minimum the effort required to operate the foot treadle.

AIR CYLINDER, Single-acting air cylinder, directly connected to the foot treadle, allows the machine to be operated by air. It is controlled by the air-foot pedal control at the base of the machine.


HINGED BELT ENCLOSURE
OIL RESERVOIR WITH SIGHT FEED OIL LINE SUPPLY TO TAP
DEPTH STOP FOR BOTTOM TAPPING
FACE PLATE FOR SIMPLE CHANGEOVER FROM SINGLE TO MULTIPLE TAPPING
ADJUSTABLE STRIPPER PLATE AND LUBRICATING TUBE AND BRUSH FURNISHED WITH SINGLE SPINDLE TAPPING UNITS
FIXED OR ADJUSTABLE MULTIPLE TAPPING UNIT ENGINEERED TO YOUR REQUIREMENTS OR 5 SIZES OF SINGLE SPINDLE TAPPING UNITS
ADJUSTABLE LIGHT
ETTCO-EMRICK ENGINEERED WORKHOLDER
STANDARD BASE WITH GUIDE RODS
LARGE ADJUSTABLE TABLE WITH OIL TROUGH
OIL PUMP MOTOR SWITCH*
1/10 HP. GUSHER TYPE OIL PUMP*
2½ GAL. OIL TANK
SINGLE ACTION AIR CYLINDER
AIR PRESSURE GAGE
SENSITIVE EASY ACTING FOOT TREADLE
AIR FLOW REGULATOR
WELDED STEEL BASE
LARGE CONVENIENT FOOT PEDAL CONTROL FOR AIR OPERATION

*Oil Pump and Switch Extra Equipment

SPECFICATIONS

Machine Spindle Travel - 3½"

O. D. of Column to Center of Tap - 7½"

Table Surface - 16" x 10½"

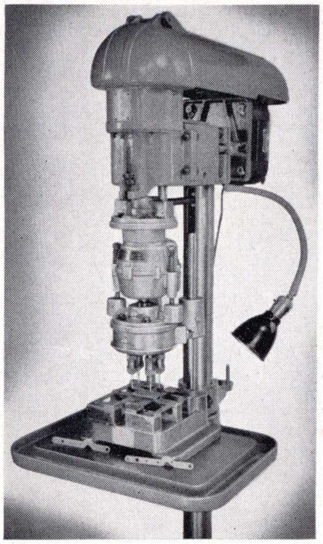
Maximum Distance from Faceplate to Table - 26"

Floor Space (Machine Base) - 22" x 20"

Overall Height - 73"

Shipping Weight (approx.) - 520 lbs.

NO. 72A IS A HIGH PRODUCTION TAPPING MACHINE
IT PRODUCES OUTSTANDING RESULTS WITH
Ettco-Emrick MULTIPLE TAPPING HEADS AND Ettco-Emrick WORK HOLDERS



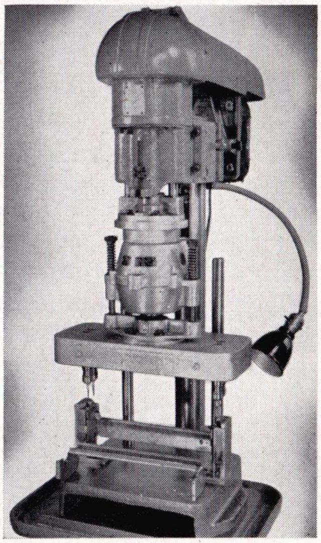
HERE'S PROOF!

1 **Part:** Zinc casting of rear direction automobile signal.
Job: Tap six 8-32 holes to bottom.
Production: 750 parts or 4500 holes per hour.

2 **Part:** Extruded steel switch bridge.
Job: Tap four 6-32 holes. Feed two parts at a time progressively. 8 spindle multiple head.
Production: 1500 parts or 12,000 holes per hour.

3 **(Right) Part:** Cast Iron.
Job: Tap four 6-32 holes per stroke.
Production: 750 parts or 3000 holes per hour.

4 **(Left) Part:** Steel.
Job: Tap two 8-32 holes—two parts per stroke.
Production: 1600 parts or 6400 holes per hour.



MACHINE PRICE LIST (See Data Sheet for construction details.)

Machine No.	DESCRIPTION**	TAP CAPACITY			PRICE*
		STEEL	C. I.-BRASS	ZINC ALUMINUM	
72A	Machine only—less tapping head.				$325.00
72A-200	Machine with No. 200 Tapping Head. With light pull spring. Adjusted for very fine tapping. Max. speed 2000 rpm.	#1 to #6	#1 to #8	#1 to #10	$400.00
72A-1B	Machine with No. 1-B Tapping Head. Medium pull spring. Max. speed 1800 rpm.	#5 to #12	#5 to ¼″	#5 to 5/16″	$390.00
72A-2B	Machine with 2-B Tapping Head. Heavy pull spring. Max. speed 1200 rpm.	#10 to 5/16″	#10 to ⅜″	#10 to ½″	$410.00
72A-3B	Machine with 3-B Tapping Head. Should be purchased only on our recommendation. For large fine pitch instrument threads where power and great sensitivity, at low speeds is required.				$445.00
72A-4B	Machine with 4-B Tapping Head. Heavy pull spring. ¾ H.P. motor required. Max. speed 1000 rpm.	¼″ to 9/16″	¼″ to ⅝″	¼″ to 11/16″	$440.00

*Subject to change without notice. F.O.B. Brooklyn. Includes stripper, brush lubricator, light, motor base, V-belt and crating. ½ to ¾ H.P. motors, starters and oil pump extra.
**All heads can be fitted with die holders for external threads.

OVER 30 YEARS ENGINEERING SERVICE. It is our business to know tapping and how to handle parts to be tapped. That's why it's best to consult ETTCO-EMRICK for recommendations *before* you decide on how you are going to do that tapping job. You give us details of your tapping requirements. We will recommend the best way of handling the part or parts and submit a proposal for your consideration. No obligation.

OTHER Ettco-Emrick PRODUCTS

KEYLESS, SELF-TIGHTENING DRILL CHUCKS • TAPPING ATTACHMENTS • TAP CHUCKS
ADJUSTABLE SPINDLE AND FIXED-CENTER MULTIPLE DRILLING AND TAPPING HEADS
ELECTRIC-AIR OPERATED DRILLING AND TAPPING MACHINES • ELECTRIC INDEXING FIXTURES
SPECIAL DRILLING AND TAPPING EQUIPMENT

ETTCO TOOL CO., INC. 594 Johnson Ave., Brooklyn 6, N. Y.
Worcester, Mass. • Detroit, Mich. • Chicago, Ill. • Swarthmore (Phila.), Pa.
Dealers throughout the United States and Canada

10M—5-51

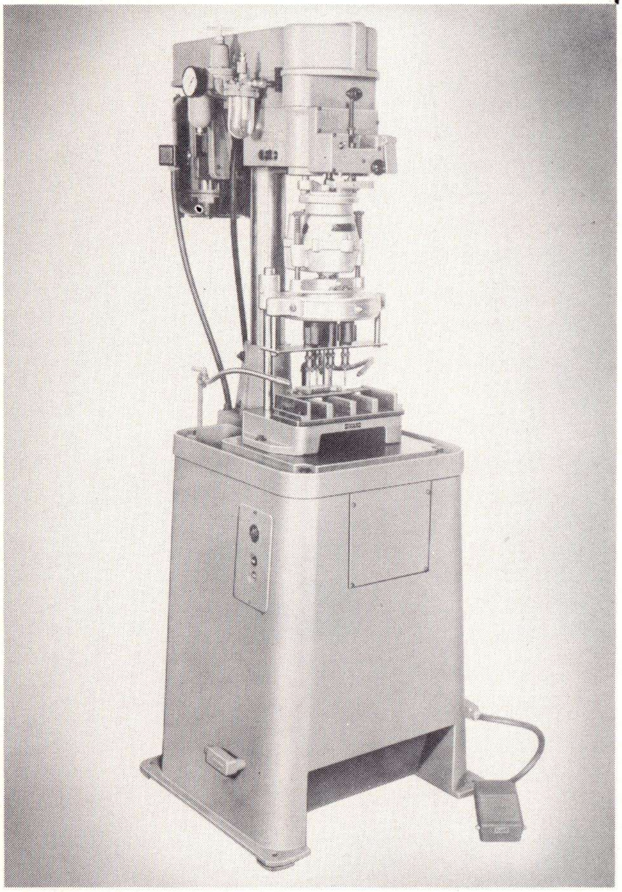
Printed in U.S.A.

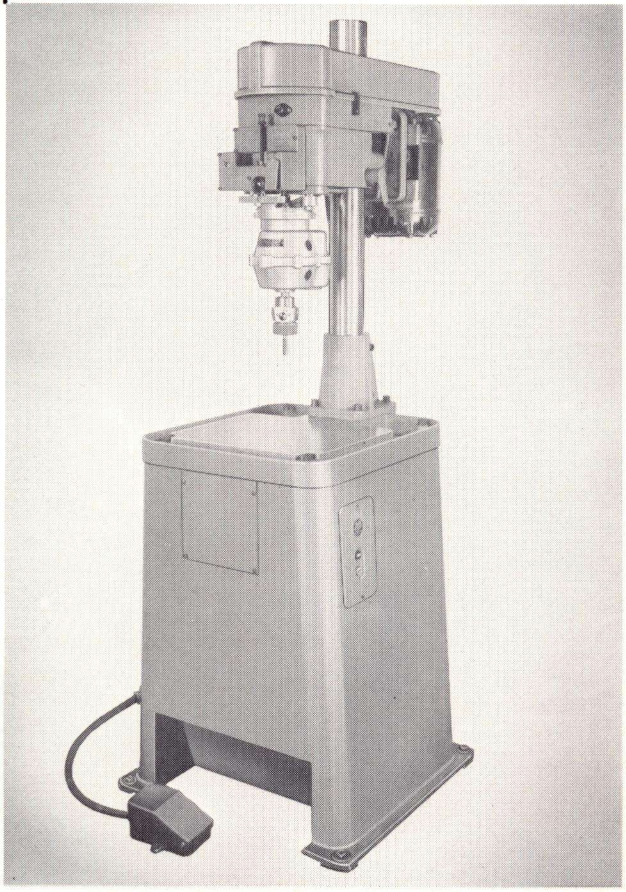
ELECTRIC-AIR CONTROLLED

Ettco-Emrick

SINGLE AND MULTIPLE SPINDLE

NO. 74 TAPPING AND DRILLING MACHINE





FOR HIGH SPEED AUTOMATIC OR SEMI-AUTOMATIC OPERATION

The No. 74 Electric-Air Controlled Machine is an accurate and highly versatile unit capable of maintaining high production rates on all types of small parts tapping and drilling jobs.

Its design permits the use of either single or multiple spindle tapping or drilling heads. Electric-air controls are used to provide automatic or semi-automatic action for all operations including indexing, clamping, controlling the depth of stroke, and ejecting finished parts.

Even inexperienced operators can do fast, accurate work with this machine. Its simple, foolproof action eliminates the need for specialized skills and greatly reduces operator fatigue.

DISTRIBUTED BY

FEATURES OF THE *Ettco-Emrick* NO. 74 MACHINE

COMPRESSED AIR CONTROL performs the following cycle of operations:

1. Maintains up-and-down motion of the machine.
2. Clamps—or holds work in stationary fixture.

ELECTRIC CONTROL provides:

1. Accurate depth of stroke up and down.
2. Continuous cycle of operation.
3. Single stroke operation.
4. Turns indexing fixture.

ETTCO-EMRICK PATENTED AIR VALVE is electrically controlled and provides:

1. "Built-in" up-and-down speed control.
2. Safety control.

HYDROCHECK can be supplied if desired.

SIMPLICITY. Drilling and tapping heads and fixtures can be readily changed from one job to another.

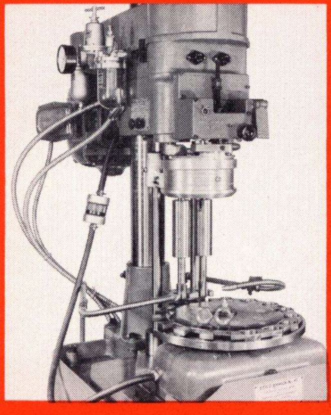
VERSATILITY. A wide range of sizes and types of heads can be used with the unit—in order to meet a wide range of parts and hole requirements—including:

1. Standard stock Single Spindle Tappers.
2. Fixed Spindle Multiple Heads.
3. Adjustable Spindle Multiple Heads.

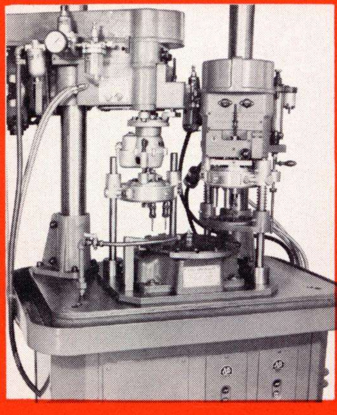
PRICES *on Ettco-Emrick No. 74 Machines with Head and Fixture Units furnished on request. Send sample of part or drawing with dimensions, tap data and production requirements. No obligation.*

SPECIAL SET-UPS

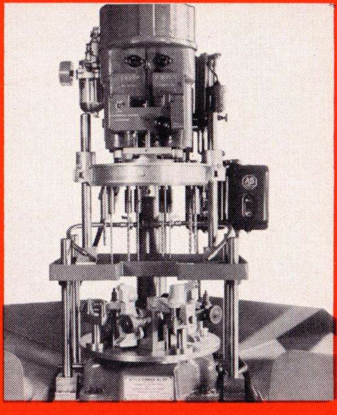
The remarkable versatility of the No. 74 machine is indicated, in part, by the illustrations shown here. Some of these set-ups may suggest ways in which you can use Ettco-Emrick Head and Fixture Units on the No. 74 machine to increase your own production.



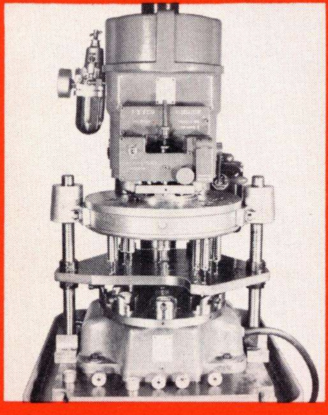
Tapping two cold rolled steel nuts with 1"—16 taps, ¾" through, using a two-spindle tapping head. A direct reversible motor and pitch compensating chucks are also used. Two parts are completed at each stroke, and the overall production rate is 800 parts per hour.



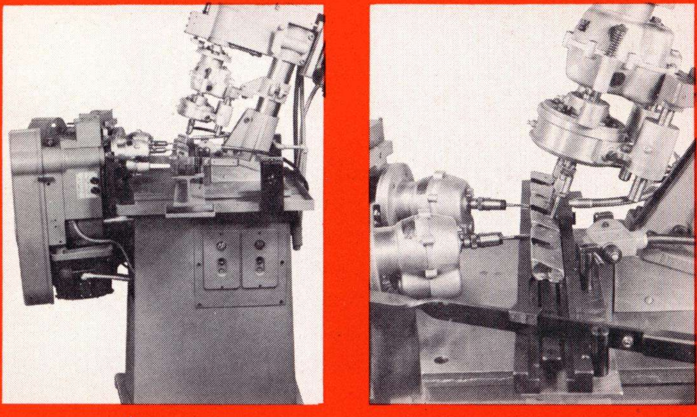
Drilling and tapping four 10-24 holes in a cast iron electrical connector. An indexing fixture, a two-spindle drilling head and a two-spindle tapping head are used in conjunction with the No. 74 machine. Two parts are completed at each stroke.



Deep hole drilling of 10 holes in aluminum die casting. Former rate—with 3 operators and 10 drill presses—15 parts per hour. Present rate—with No. 74 machine, indexing fixture and multiple head—50 pieces per hour with one operator—a 333% increase with a big saving in costs.



Drilling 12 holes in sintered powdered metal parts. Production rate 1600 to 1800 pieces per hour.



Tapping 4 extruded holes in a metal stamping at 3 different angles in one operation. Close-up (at right) shows how it's done with a two-spindle multiple head and two tapping attachments.

Ettco-Emrick **ETTCO TOOL CO., INC., 594 Johnson Ave., Brooklyn 37, N.Y.**

Worcester, Mass. • Detroit, Mich. • Chicago, Ill. • Dealers throughout the United States and Canada

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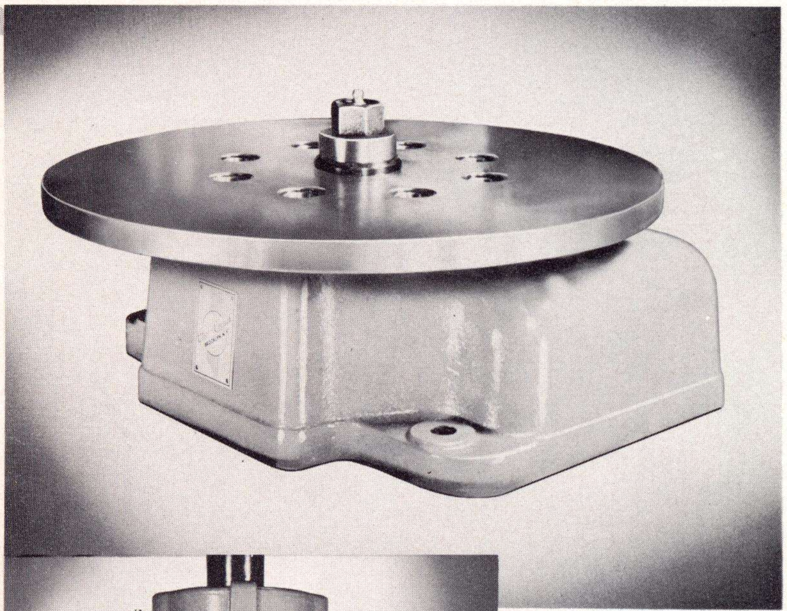
Ettco-Emrick

No. 97 AUTOMATIC

ELECTRIC INDEX FIXTURE

(Patent Pending)



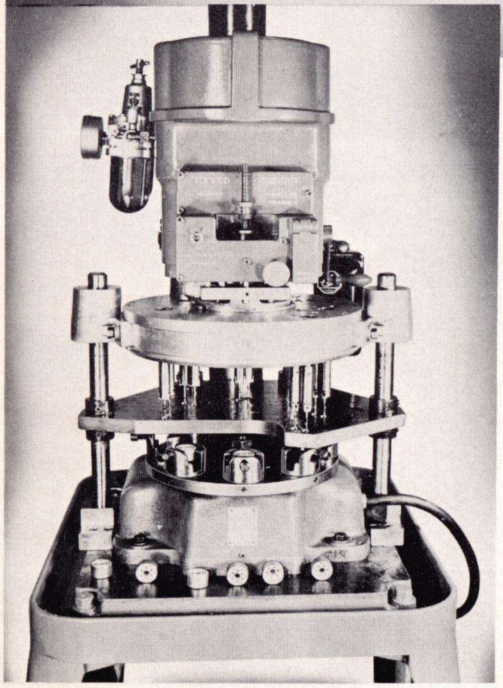
FEATURES

TABLE INDEXING MOTIONS are controlled by a modified geneva system resulting in smooth, shockless, positive action.

PRECISION LOCATIONS of the index table are assured by the hardened locating pin. This permits extremely close tolerance to be performed on the work piece.

A PRECISION CAM is used to raise and lower the locating pin. No springs are employed in this unit.

DESIGN of this self-contained unit permits its use on any machine base. The indexing time from one position to the next is 1.4 seconds or 0.7 seconds depending on the design purchased.



Typical set up of the Ettco-Emrick No. 97 electric index fixture on an Ettco-Emrick No. 74 electric-air operated drilling or tapping machine. One part containing twelve holes is finished with each index stroke of the machine.

SYNCHRONIZED motions of outside member and index fixture are controlled electrically. After the index plate has advanced and locked in its next position, the electric contact is made inside the base of the index fixture to start the downward motion of the outside member. The table cannot be indexed until the outside member is again in its "up" position. Depending on the requirements, the fixture can be automatic or push button controlled.

ONE-PIECE OIL-TIGHT CASE protects the necessary moving parts, electric controls, and the completely enclosed ball bearing electric motor from dirt, chips, coolant, etc. Two external grease nipples lubricate all moving parts inside the index fixture.

1/20 H.P. INDUCTION MOTOR has been carefully selected and so designed that normal temperature prevails through millions of working cycles.

EIGHT STATIONS have proved to be the most desirable number of stations. Ettco has been building index fixtures for years.

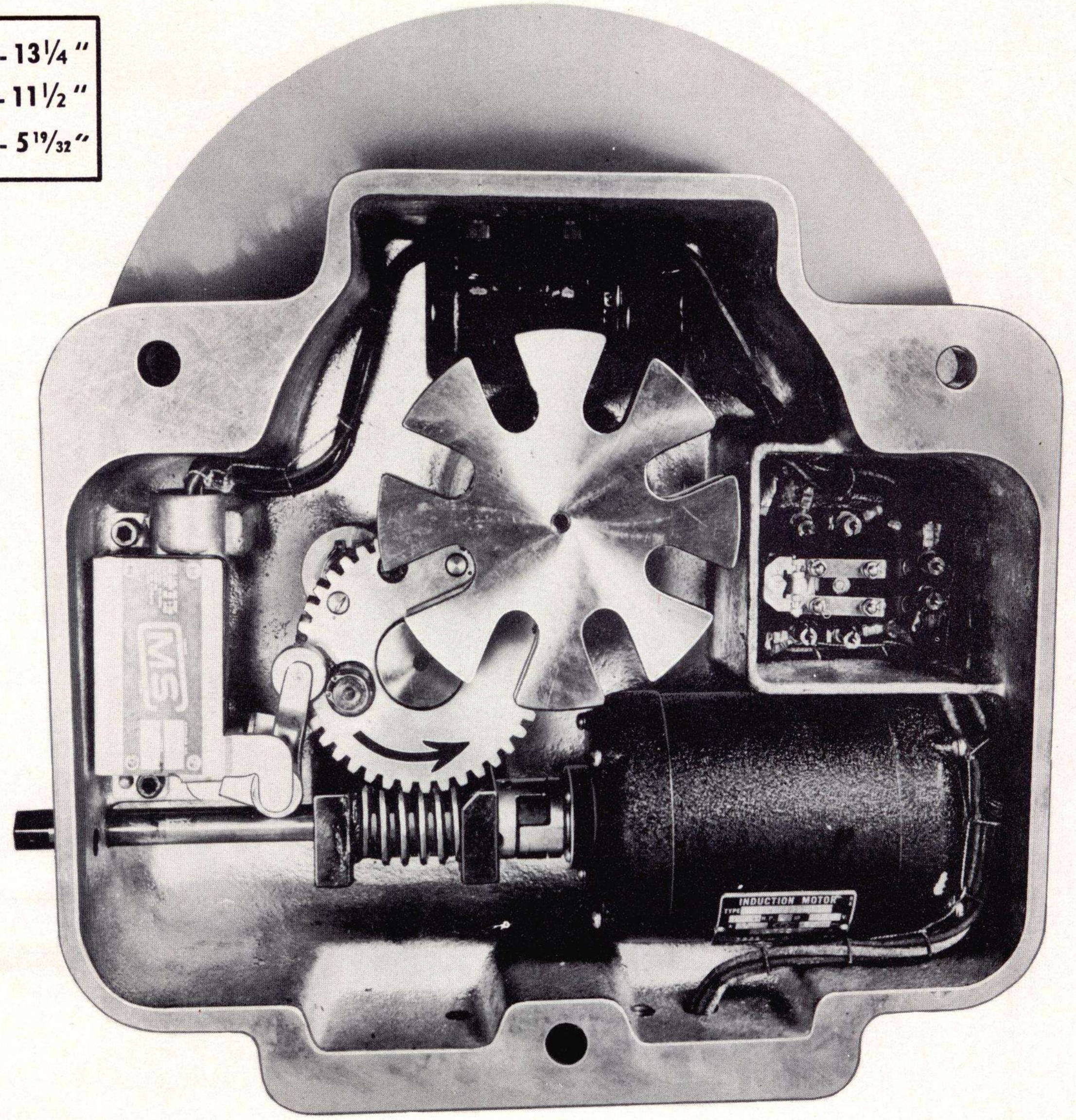
INTERCHANGEABLE PLATES are carried in stock from ten to fourteen inches in diameter. Thickness 5/8".

GUIDE RODS can be bolted to index fixture to accurately locate Ettco-Emrick Multiple Heads.

Distributed by

BOTTOM VIEW OF
Ettco-Emrick No. 97 INDEX FIXTURE

WIDTH - 13¼"
DEPTH - 11½"
HEIGHT - 5 19/32"



The 1/20 H.P. induction motor provides power to the hardened and ground worm which in turn drives a bronze worm gear. A roller extending from the bottom of this bronze gear, enters the slot of the indexing shaft and rotates it to the next position with a geneva action. The up and down motion of the hardened and ground locating pin, is controlled by a cam which is part of the bronze gear. The only time this locating pin is in its down position is during the geneva indexing. After indexing and with the locating pin in its up position, the roller then actuates the double throw micro-switch. As this switch is depressed it cuts the current to the motor thus stopping the index cycle. As the roller continues to depress the micro switch, it makes contact on its built-in second electric circuit which is used to control the time of the downward motion of the spindle. Please note, that the electric circuit built into the indexing fixture not only controls the downward motion of the spindle, but also keeps the spindle synchronized. The action can be continuous or controlled by the operation of a push button or foot switch.

PRICE $535.00 LESS 10% DISCOUNT F.O.B. BROOKLYN (Subject to change without notice.)

ETTCO TOOL CO., 594 JOHNSON AVE., BROOKLYN 37, N. Y.

TAPPING ATTACHMENTS · KEYLESS DRILL CHUCKS · TAP CHUCKS
ELECTRIC AIR TAPPING MACHINES · FIXED SPINDLE MULTIPLE HEADS
FOOT OPERATED TAPPING MACHINES · ADJUSTABLE SPINDLE MULTIPLE HEADS

5M—8-52
Printed in U.S.A.

STANDARD BUTTON TYPE DIE HOLDERS

FOR

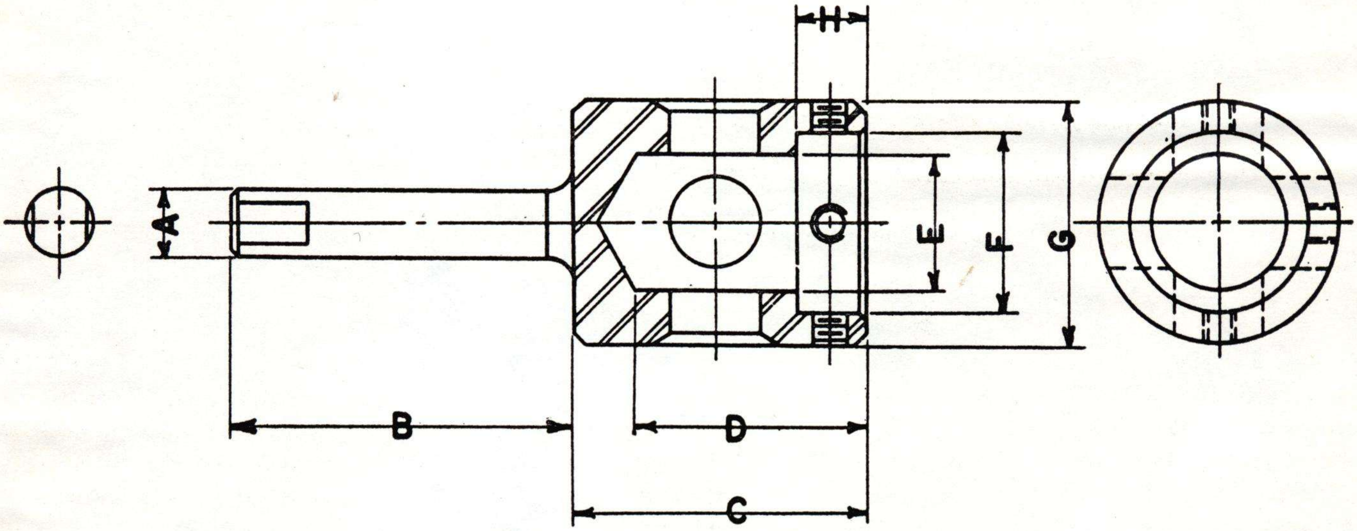
Ettco-Emrick TAPPING ATTACHMENTS

MAKE YOUR ETTCO-EMRICK TAPPING ATTACHMENT A HIGH SPEED, SENSITIVE THREADING UNIT WITH THESE STANDARD BUTTON TYPE DIE HOLDERS.

THESE HOLDERS ARE HELD BY THE TAP CHUCK ONLY. THEY ARE QUICKLY INSERTED AND REMOVED.

MADE IN THREE SIZES TO HOLD STANDARD ROUND SPLIT ADJUSTABLE DIES LISTED IN TABLE BELOW.

MODEL NO.	USED WITH TAPPER NO.	OUTSIDE DIE-DIA.	SIZE RANGE	PRICE OF HOLDER
DH-2	1B & 2B	13/16"	1/16" TO 5/16"	$5.25
DH-3	2B & 3B & 4B	1"	3/16" TO 1/2 "	$5.50
DH-5	4B & 5B	1 1/2"	1/4 " TO 5/8 "	$6.00



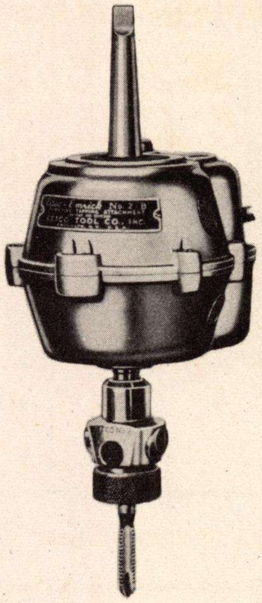
MODEL NO.	A	B	C	D	E	F	G	H
DH-2	5/16	1 1/4	1 5/8	1 3/8	9/16	.8125	1 11/64	.250
DH-3	3/8	1 7/8	1 5/8	1 3/8	3/4	1.0000	1 11/32	.375
DH-5	9/16	2	2	1 5/8	1 1/8	1.5000	1 63/64	.500

ETTCO TOOL CO., INC. **594 Johnson Ave. Brooklyn 6, N. Y.**

BULLETIN NO. 23

HOW TO GET MAXIMUM SERVICE FROM *Ettco-Emrick* TAPPING ATTACHMENTS

IT'S VITAL today to keep tools working and make them last as long as possible. Your Ettco-Emrick Tapping Attachments will give you long, easy, trouble-free service — if you use them correctly and give them the small amount of care they need. The following DON'TS will help you.



DON'T fail to clean taper shank of Attachment and hole in machine spindle before mounting — and never hammer them in or out.

DON'T put tapper in drill press spindle and then force tapper down on tap chuck as this will cause clutch to lock. Take tapper in both hands and snap into place.

DON'T operate tapper unless tap chuck has a free up-and-down motion. If it sticks, pry loose.

DON'T operate over the maximum r.p.m. in the table below.

DON'T use Attachment beyond its tap capacity. Remember, there are 7 different sizes for taps from #0 to ¾″ as listed in the table below.

DON'T use hand taps. They may spoil the work and ruin the Attachment. Taps made for machine operation are needed.

DON'T tighten the chuck on tap square first — always on the round shank first, and by hand *only* — then on the tap square with wrench provided. This gives you true centering and positive driving.

DON'T let the tap run out of true.

DON'T operate if the clutch keeps slipping or if excessive heat develops. When either happens, something's wrong. Check the hole, the tap, the speed, the cutting lubricant. If in doubt on any point, our 30 years' experience are at your service.

DON'T over-oil. A few drops, once a day only in the places marked "OIL", are plenty. Excess oil may cause slippage and excessive heat may ruin the leather clutch.

DON'T fail to use Quill Clamps where we recommend them. They keep Attachments absolutely rigid. We can supply them for any drill press.

DON'T attempt to make your own repairs. Send the Attachment to us for inspection, test and reconditioning by our experts. It's quickest and best.

THE SEVEN SIZES of Ettco-Emrick Tappers are listed at right. The *maximum* speeds and capacities given, have been carefully determined. Where they are not exceeded you can count on long, dependable service.

SIZE	MAXIMUM R.P.M.	MAX. CAPACITY IN STEEL	LUBRICATION
#100	2200	#5 Tap	Keep filled to indicated oil level with #10 SAE oil.
#200	2000	#10 Tap	
Flush #100 and #200 Tappers every 2 months with kerosene and refill with oil.			
#1-B	1800	¼″ Tap	A few drops of #30 SAE machine oil each day.
#2-B	1200	⅜″ Tap	
#3-B	1000	½″ Tap	
#4-B	1000	⅝″ Tap	
#5-B	1000	¾″ Tap	

FOR PRECISION TAPPING CONSULT ETTCO as to the correct size attachment and correct taps to use — which Ettco knows from long years of specialization in machine tapping.

ETTCO TOOL CO. 594 JOHNSON AVENUE, BROOKLYN 6, N. Y.

Boston, Mass. • Portland, Conn. • Detroit, Mich. • Chicago, Ill.

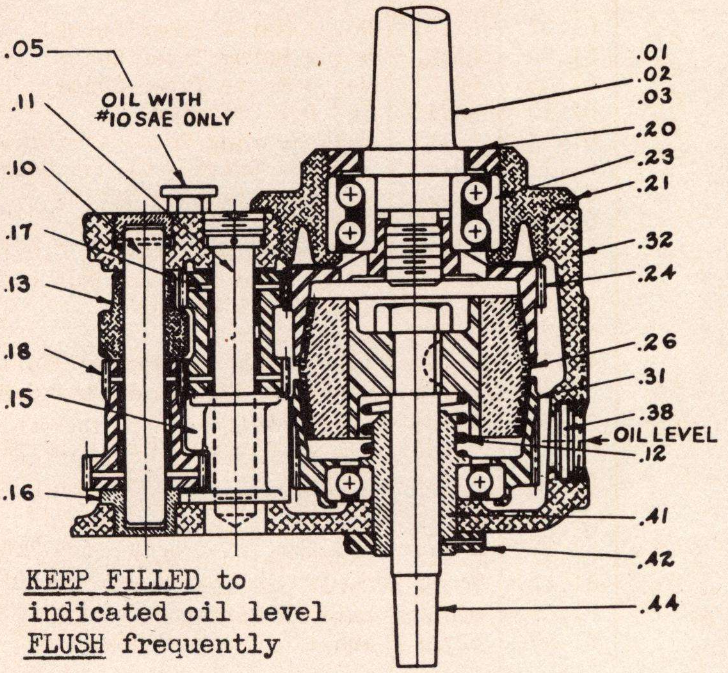
Over a quarter of a century in solving Industry's drilling and tapping problems

BULLETIN 22-S

Ettco-Emrick TAPPING A

When ordering parts, be sure to give the complete part number and name as given in the tables

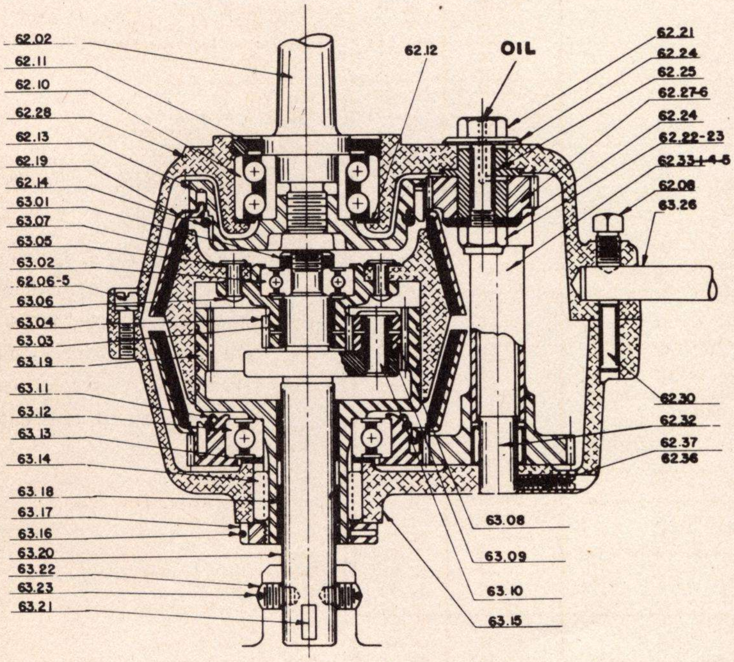
#100 AND #200 ATTACHMENTS



KEEP FILLED to indicated oil level FLUSH frequently

PART NUMBER		PART NAME (Parts bracketed come as assemblies)
#100	#200	
1.01	2.01	No. 1 Morse Taper Shank
1.02	2.02	No. 2 Morse Taper Shank
1.03	2.03	No. 3 Morse Taper Shank
1.05	2.05	Oil Hole Cup
1.10	2.10	Long Gear Shaft Assembly
1.11	2.11	Short Gear Shaft Assembly
1.12	2.12	Balance Spring
1.13	2.13	Idler Gear Space Collar
1.15	2.15	Reverse Gear Thrust
1.16	2.16	Idler Gear Thrust
1.17	2.17	Reverse Quill Gear & Bushings
1.18	2.18	Idler Quill Gear & Bushings
1.19	2.19	Ball Bearing Lock Nut & Washer
1.20	2.20	
1.21	2.21	Case Cover & Gaskets
1.22	2.22	
1.23	2.23	Upper Ball Bearing
1.24	2.24	Driving Shell
1.26	2.26	Clutch
1.31	2.31	Reverse Shell & Ball Bearing
1.32	2.32	Case
1.38	2.38	Sight Glass Assembly
1.39	2.39	Sight Glass only
1.41	2.41	Chuck Spindle Bushing
1.42	2.42	Bushing Nut & Lock Spring
1.44	2.44	Chuck Spindle

#3-B ATTACHMENTS



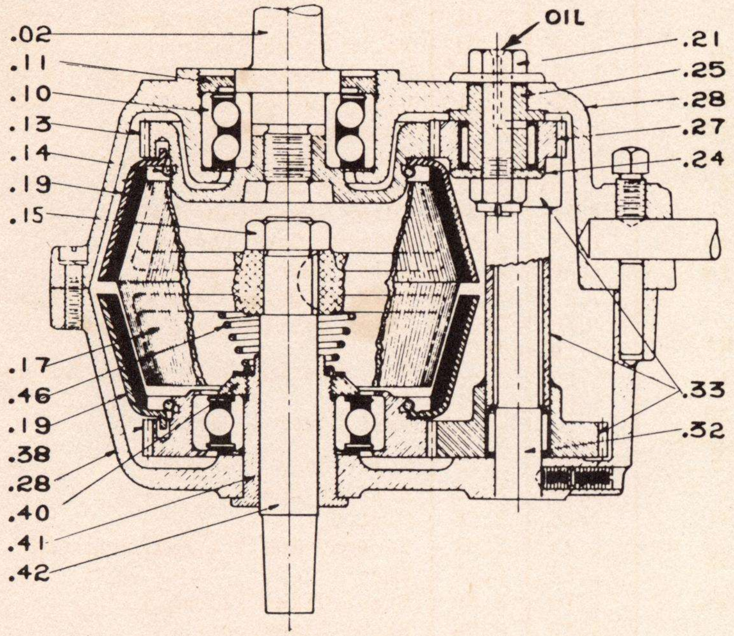
OIL with a few drops of machine oil daily

PART NUMBER	PART NAME
62.02	#2 Morse taper shank
62.03	#3 Morse taper shank
62.05	Case screw lock washers (7)
62.06	Case screws (7)
62.08	Stop rod set screw
62.10	Top ball bearing
62.11	Ball bearing retainer nut
62.12	Ball bearing thrust washer
62.13	Forward driving clutch gear and pins
62.14	Clutch retaining spring
62.19	Leather lined driving clutch
62.21	Idler stud bolt
62.22	Idler stud bolt nut
62.23	Idler stud bolt cotter pin
62.24	Idler gear washers (2)
62.25	Idler gear stud
62.27-26	Idler gear and needle bearing
62.32	Quill gear shaft
62.31-3-4-5	Quill gear and needle bearings
62.36	Cone point set screw
62.37	Flat point set screw
63.01	Chuck spindle nut
63.02	Chuck spindle ball bearing
63.03	Sun Gear bushing
63.04	Sun gear
63.05	Clutch washer
63.06	Clutch rivets (6)
63.02-3-4 5-6-7	Sun gear, bushing, chuck spindle ball bearing, clutch washer, clutch rivets and aluminum clutch
63.08	Planetary gears
63.09	Planetary gear bushings
63.08-9-10 20-25	Planetary gears, bushings, studs, chuck shaft and set screws
63.07	Aluminum clutch
63.10	Planetary gear studs(3)
63.11-12	Reverse shell gears, pins and ball bearing
63.13	Reverse ball bearing washer
63.14	Internal gear keys (2)
63.15-62.28	Top and bottom case complete (Only sold complete)
63.16	Internal gear lock nut spring
63.17	Internal gear lock nut
63.18	Internal gear bushing
63.19	Internal gear
63.20	Chuck shaft
63.21	Chuck shaft key
63.22	Chuck screws (2)
63.23	Chuck screws spring
63.25	Chuck shaft stud set screws
63.26	Stop rod and chain assembly
63.49	Ventilators (not shown)

ATTACHMENTS - PARTS LISTS

When ordering parts, be sure to give the complete part number and name as given in the tables

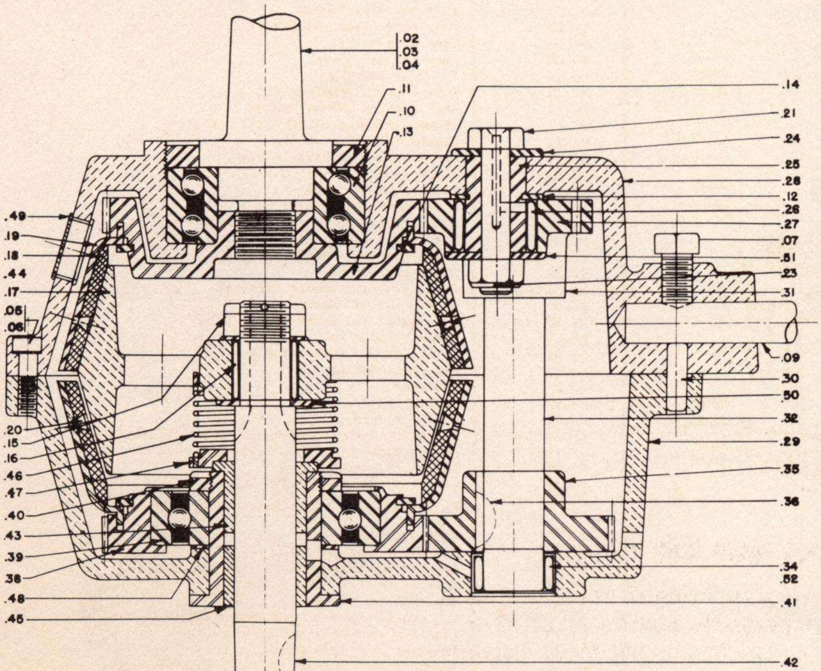
#1-B AND #2-B ATTACHMENTS



OIL with a few drops of machine oil daily

PART NUMBER #1-B	PART NUMBER #2-B	PART NAME
61.01	62.01	No. 1 Morse Taper Shank
61.02	62.02	No. 2 Morse Taper Shank
61.03	62.03	No. 3 Morse Taper Shank
61.10	62.10	Top Ball Bearing
61.11	62.11	Ball Bearing Retainer Screw
61.13	62.13	Forward Driving Clutch Gear
61.14	62.14	Clutch Retaining Spring
61.17	62.17	Aluminum Driven Clutch
61.19	62.19	Leather Lined Driving Clutch
61.21	62.21	Idler Stud Bolt and Nut
61.24	62.24	Idler Gear Washer
61.25	62.25	Idler Gear Stud
61.27	62.27	Idler Gear and Needle Bearing
61.28	62.28	Complete Top and Bottom Case
61.32	62.32	Quill Gear Shaft
61.33	62.33	Quill Gear and Needle Bearings
61.38	62.38	Reverse Clutch Gear and Ball Bearings
61.40	62.40	Spindle Bushing Nut
61.41	62.41	Chuck Spindle Bushing
61.42	62.42	Chuck Spindle
61.46	62.46	Balance Spring
61.49	62.49	Ventilators (not shown)

#4-B AND #5-B ATTACHMENTS

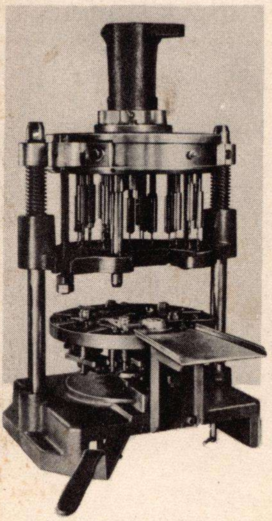


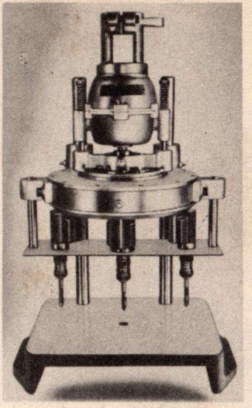
NOTE:
65.52 TOP BEARING - OIL HOLE ON TOP
65.34 BOTTOM BEARING - OIL HOLE ON SIDE

OIL with a few drops of machine oil daily

PART NUMBER #4-B	PART NUMBER #5-B	PART NAME (Parts bracketed come as assemblies)
64.02	65.02	No. 2 Morse taper shank
64.03	65.03	No. 3 Morse taper shank
64.04	65.04	No. 4 Morse taper shank
64.05	65.05	Case screw lock washers (7)
64.06	65.06	Case screws (7)
64.07	65.07	Stop rod set screw
64.09	65.09	Stop rod
64.10	65.10	Top ball bearing
64.11	65.11	Ball bearing retainer screw
64.12	65.12	Idler gear snap ring
64.13	65.13	Forward shell gear
64.14	65.14	Clutch retaining spring
64.15	65.15	Castellated nut and cotter pin
64.16	65.16	Driven clutch keys (2)
64.17	65.17	Driven clutch
64.18	65.18⎫	Clutch leathers
64.19	65.19⎬	Reverse & forward clutch shell
64.20	65.20⎭	Rivets
64.21	65.21	Idler gear bolt & nut
64.23	65.23	Idler gear cotter pin
64.24	65.24	Idler gear stud washer
64.25	65.25	Idler gear stud
64.26	65.26	Idler gear bearing
64.27	65.27	Idler gear
64.28	65.28⎫	Top half of case
64.29	65.29⎭	Bottom half of case
64.30	65.30	Dowels (2)
64.31	65.31	Top quill gear
64.32	65.32	Quill gear shaft
64.34	65.34	Quill gear bearing (see note)
64.35	65.35	Bottom quill gear
64.36	65.36	Quill gear keys (2)
64.38	65.38⎫	Reverse gear
64.39	65.39⎭	Reverse ball bearing
64.40	65.40	Bushing nut
64.41	65.41	Chuck spindle bushing retainer
64.42	65.42	Chuck spindle
64.43	65.43	Top spindle bushing
64.44	65.44	Name plate
64.45	65.45	Bottom spindle bushing
64.46	65.46	Balance spring
64.47	65.47	Balance spring thrust washer
64.48	65.48	Ball bearing thrust washer
64.49	65.49	Ventilators
64.50	65.50	Driven clutch washer
64.51	65.51	Idler gear washer
64.52	65.52	Top quill gear bearing (see note)

OTHER *Ettco-Emrick* PRODUCTS



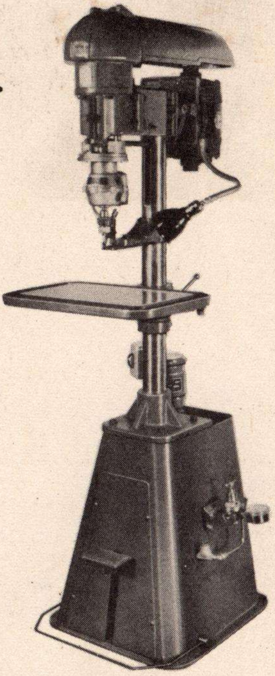


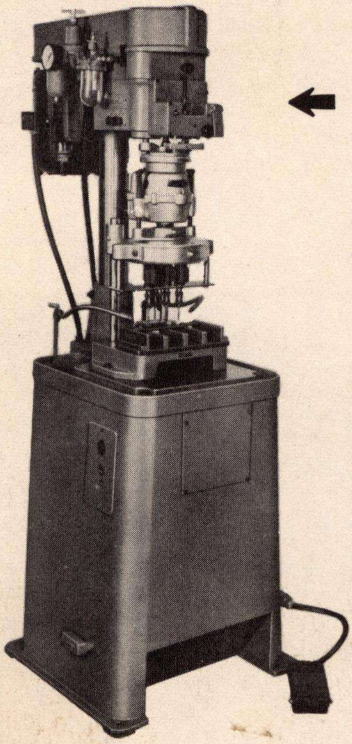
FIXED AND ADJUSTABLE SPINDLE MULTIPLE HEADS WITH WORK HOLDING FIXTURES

The Ettco-Emrick System of Multiple Spindle Heads is a proven means of obtaining highest production of drilled or tapped holes. It provides both the method and equipment for drilling or tapping a given number of holes simultaneously. Cost is low because heads are made of standard parts, adapted and assembled to specific requirements—and because they can be used on any drill press or tapping machine. *Write for Fixed Spindle Bulletin No. 3 and for Adjustable Spindle Bulletin No. 35.*

FOOT OR AIR OPERATED No. 72A TAPPING MACHINE

A specially designed sensitive tapping machine that can be operated by using either foot or air pressure. Interchangeable single spindle tapping units and multiple heads allow quick changeover from one production job to another. No skill or delicate touch is required. The tapping skill usually needed is built into this high production machine. *Write for Bulletin No. 72A.*



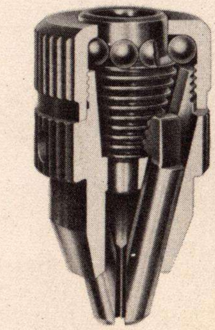


No. 74 AUTOMATIC TAPPING MACHINE

The Ettco-Emrick electric-air controlled single and multiple tapping machine is the result of 30 years of specialization in developing tapping methods and equipment. Especially designed for the use of multiple heads, it offers an easy way to tap one or more holes simultaneously. *Write for Bulletin No. 74.*

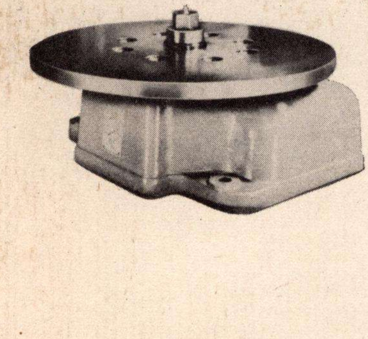
KEYLESS BALL BEARING DRILL CHUCK

No key or repeated retightening is required. Drilling action does the tightening and the heavier the load, the tighter they hold. These chucks are rugged, durable and highly accurate. They're unconditionally guaranteed for workmanship, material and performance. Four different sizes with capacities ranging from No. 0 to ⅝″ drills for all drill presses and portable electric drills. Morse taper, Brown & Sharpe and Straight Shanks are available. *Write for Bulletin No. 7.*

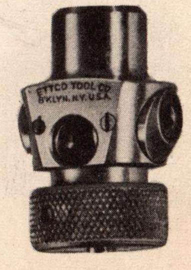


No. 97 AUTOMATIC ELECTRIC INDEX FIXTURE

Highly accurate and rapid indexing of work pieces is possible with this unit that can be used on punch presses, tapping machines, drill presses or other similar machines. It has a self-contained electric drive and provides electrical synchronization of indexing and vertical movements of the machine's spindle. Smooth, fast shockless action is accomplished by a modified geneva system. *Write for Bulletin No. 97.*



VISIBLE GRIP TAP CHUCK



Visible grip assures true centering on the round, and positive gripping and driving on the square. An ideal universal tap holder for screw machines, quick change collets, etc. Five different sizes for No. 0 to 1″ drills. *Write for Bulletin No. 22.*

ETTCO TOOL CO., INC. • **594 Johnson Ave., Brooklyn 6, N. Y.**

DEALERS THROUGHOUT THE UNITED STATES AND CANADA

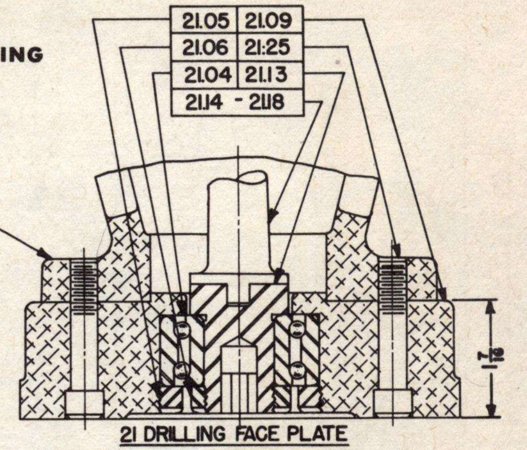
10M-6-51
Printed in U.S.A.

Ettco-Emrick

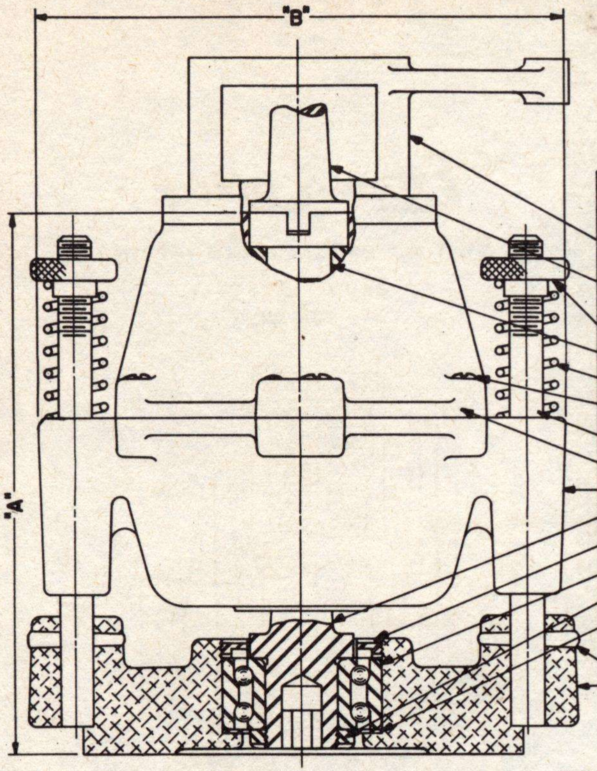
MULTIPLE DRILLING AND TAPPING

31.00 SYSTEM

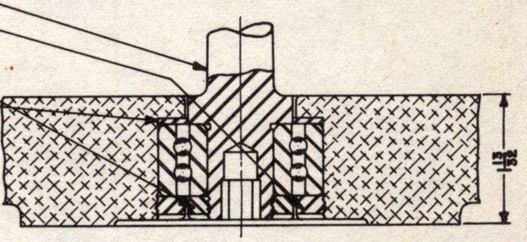
5-49 H.M.



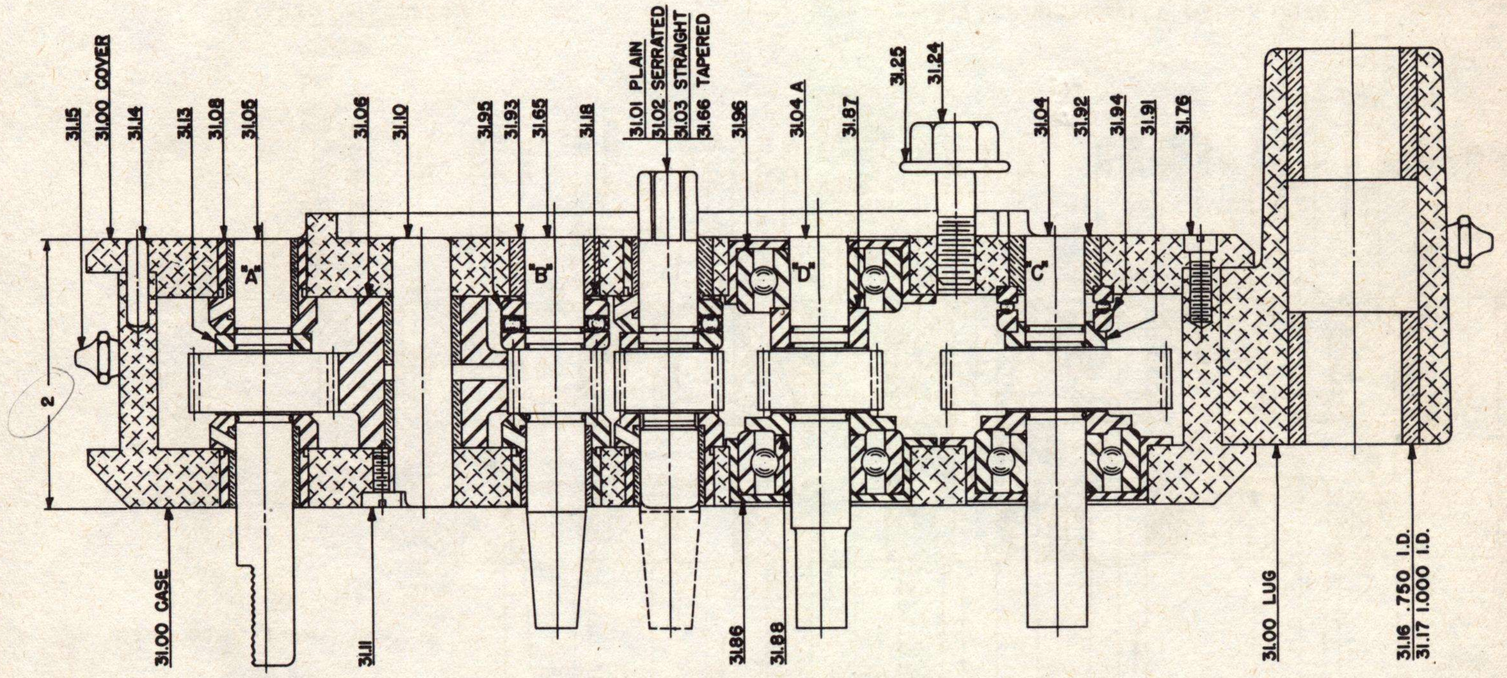
21 DRILLING FACE PLATE
5 INCH



TAPPING UNITS					
11	22	33	44	55	
QUILL CLAMP TO FIT PRESS					
61.61 TO 61.65	62.61 TO 62.65	62.61 TO 62.65	64.62 TO 64.65	65.62 TO 65.65	
11.13	22.13	33.13	44.03	55.03	
61.60	62.60	62.60	64.61	65.61	
11.12	22.12	33.12	44.02	55.02	
61.06	62.06	62.06	64.06	65.06	
11.10	22.10	33.10	44.01	55.01	
61.28	62.28	62.28	64.28	65.28	
11.14	22.14	33.14	44.04	55.04	
61.42 / 11.21	22.50	33.50	44.05	55.05	
11.15	22.15	33.15	44.08	55.08	
11.18	22.18	33.18	44.07	55.07	
11.20	22.20	33.20	44.09	55.09	
11.19	22.19	33.19	44.06	55.06	
11.11	22.11	33.11	44.11	55.11	
11.17	22.17	33.17	44.10	55.10	
5 1/2	6 3/4	6 3/4	7 3/16	7 3/8	"A"
6	6	6	7 1/8	8 1/8	"B"



31.00 SYSTEM 5" TAPPING FACE PLATE



31.00	CASE & COVER
31.00	DOUBLE LUG (GIVE CASE SIZE)
31.00	SINGLE LUG (GIVE CASE SIZE)
31.01	PLAIN DRIVE GEAR
31.02	SERRATED DRIVE GEAR
31.03	STRAIGHT DRIVE GEAR
31.04	INTEGRAL SPINDLE COMPLETE / CHUCK
31.04	STRAIGHT 7/16 SPINDLE ONLY
31.04A	STRAIGHT 3/8 SPINDLE
31.05	SERRATED SPINDLE
31.06	IDLER GEAR
31.08	SPINDLE BUSHING
31.10	IDLER GEAR SHAFT
31.11	IDLER GEAR SHAFT SCREW
31.13	SHAFT THRUST WASHER
31.14	CASE DOWEL
31.15	GREASE NIPPLE

31.16	GUIDE LUG BUSHING .750 I.D.
31.17	GUIDE LUG BUSHING 1.000 I.D.
31.18	B/B THRUST WASHER
31.24	FACE PLATE BOLT
31.25	FACE PLATE BOLT WASHER
31.65	DRIVEN SPINDLE 1A TAPER
31.66	DRIVE SPINDLE 1A TAPER
31.76	COVER SCREWS
31.86	BALL BEARING CAGE
31.87	TOP FULL B/B THRUST WASHER
31.88	BOTTOM FULL B/B THRUST WASHER
31.91	THRUST WASHER
31.92	DL-15 CASE BUSHING
31.93	CASE BUSHING
31.94	DL-15 BALL BEARING
31.95	DL-12 BALL BEARING
31.96	9011-D BALL BEARING

NOTE:

#1

SPINDLE CONSTRUCTIONS

A-TAPPING - HDN.& GR. THRUSTS.	.750 MIN.
B-DRILLING-DL-12 B/B	.906 MIN.
C-HEAVY DRILLING- FULL B/B	1.500 MIN.
D-HEAVY MILLING - FULL B/B	1.500 MIN.

#2

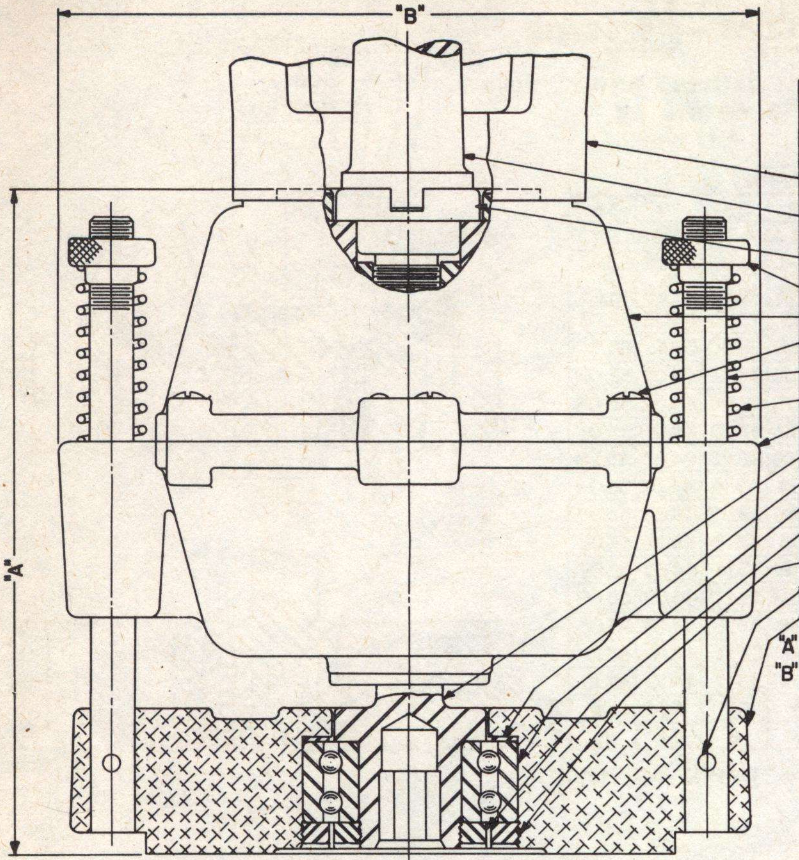
ANY OF THE ABOVE CONSTRUCTIONS MAY
BE USED WITH EITHER A TAPERED,
SERRATED OR STRAIGHT SPINDLE.

Ettco-Emrick

MULTIPLE DRILLING AND TAPPING

32.00 SYSTEM

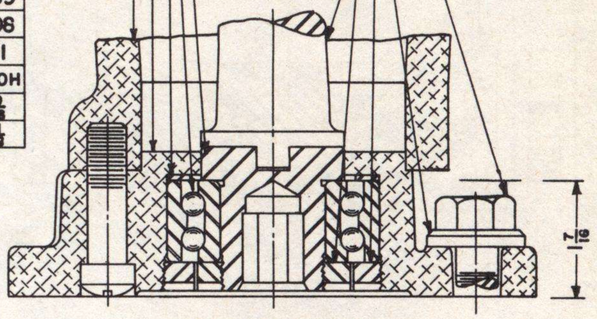
5-49 H.M.



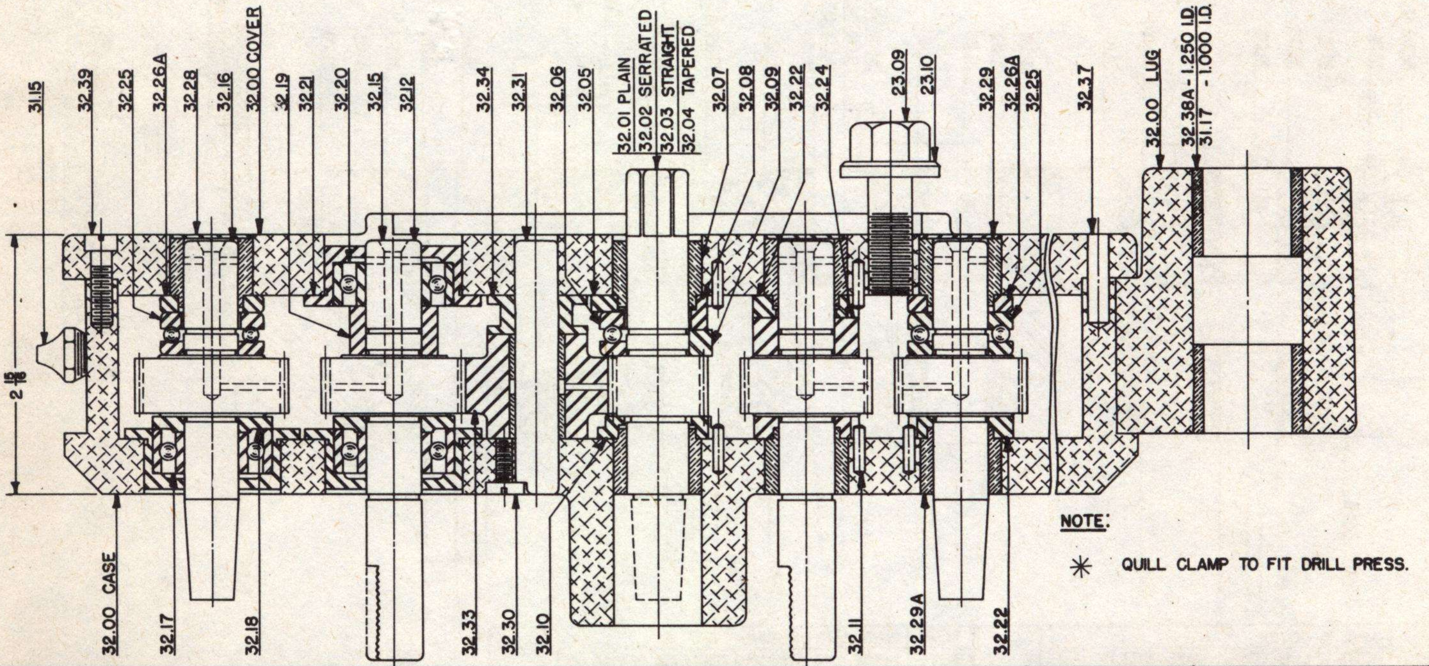
	TAPPING UNITS	
	44	55
	QUILL CLAMP *	
	64.62 TO 64.65	65.62 TO 65.65
	64.61	65.61
	44.03	55.03
	64.28	65.28
	64.06	65.06
	44.01	55.01
	44.02	55.02
	44.04	55.04
	44.05	55.05H
	44.06	55.06
	44.07	55.07
	44.09	55.09
	44.08	55.06
	44.11	55.11
	44.10	44.10H
"A"	7¼	7 9/16
"B"	7½	8⅛

32.00 SYSTEM 6" TAPPING FACE PLATE

QUILL CLAMP	
23.08	23.09
23.06	23.10
23.07	23.11
23.13	23.12
23.14 – 23.17	



23 DRILLING FACE PLATE
6 INCH



NOTE:

* QUILL CLAMP TO FIT DRILL PRESS.

32.00	CASE & COVER		32.12	INTEGRAL DRIVEN SPINDLE		32.29A	BOTTOM DRIVEN SPINDLE BUSHING	
32.00	DOUBLE LUG (GIVE CASE SIZE)		32.15	SERRATED DRIVEN SPINDLE		32.30	IDLER SHAFT LOCK SCREW	
32.00	SINGLE LUG (GIVE CASE SIZE)		32.16	TAPERED DRIVEN SPINDLE		32.31	IDLER GEAR SHAFT	
32.01	PLAIN DRIVE SPINDLE		32.17	BOTTOM FULL BALL BEARING - 9016-D		32.33	IDLER GEAR	
32.02	SERRATED DRIVE SPINDLE		32.18	BOTTOM B/B SLINGER		32.34	SPACER	
32.03	STRAIGHT DRIVE SPINDLE & CHUCK ASS'Y.		32.19	TOP B/B SEPERATOR COLLAR		32.37	CASE DOWEL	
32.04	TAPERED DRIVE SPINDLE		32.20	TOP BALL BEARING - 9015-D		32.38A	GUIDE LUG BUSHING- 1.250 I.D.	
32.05	DRIVE GEAR B/B THRUST WASHER		32.21	BALL BEARING CAGE -		32.39	CASE SCREWS	
32.06	DRIVE GEAR BALL BEARING - 2903		32.22	TOP & BOTTOM DRIVEN GEAR THRUST		31.15	GREASE NIPPLE	
32.07	TOP & BOTTOM DRIVE GEAR BUSHINGS		32.24	DRIVEN GEAR PLAIN THRUST		31.17	GUIDE LUG BUSHING 1.000 I.D.	
32.08	DRIVE GEAR PLAIN TOP THRUST		32.25	DRIVEN SPINDLE BALL BEARING - 2902		23.09	FACE PLATE BOLTS	
32.09	DRIVE GEAR SPINDLE PLAIN THRUST		32.26A	2902 BALL BEARING THRUST		23.10	FACE PLATE BOLT WASHERS	
32.10	DRIVE GEAR BOTTOM THRUST		32.28	SPINDLE BUSHING COVERS				
32.11	BOTTOM THRUST DOWEL		32.29	TOP DRIVEN SPINDLE BUSHING				

Ettco-Emrick No. 72 FOOT OPERATED TAPPING MACHINE

PRICE LIST OF PARTS

PART NUMBER	PART NAME	LIST PRICE**
72.01	Belt	$ 2.20
72.02	Spindle pulley	3.85
72.03	Spindle pulley key	.20
72.04	Belt guard (front)	10.00
72.04B	Belt guard (rear)	20.00
72.05	Spindle tubing	20.00
72.06	Ball bearing lock nut	.85
72.07	Ball bearing lock nut washer	.15
72.08	Ball bearing holddown washer	1.50
72.09	Upper spindle ball bearing	4.20
72.10	Spindle washer	.35
72.11	Drive spindle	16.00
72.12	Stop nuts (2)	1.50
72.13	Stop rod	1.00
72.14	Spindle keys (2)	2.00
72.15	Spindle key lock ring	.50
72.16	Spindle housing	30.00
72.17	Oil housing	22.00
72.18	Lower spindle ball bearing	3.20
72.19	Bronze spindle bearing	.90
72.20	Guide rod bushings (4)	8.00
72.21	Guide rods (2)	10.00
72.22	Face plate	15.00
72.23	Face plate ball bearing	2.80
72.24	Ball bearing lock nut	.75
72.25	Ball bearing lock screw	1.00
72.26	Motor pulley	2.50
72.27	Motor base—½h.p.	5.00
72.28	Motor base rods (2)	2.00
72.29	Oil hole cover	1.50
72.30	Actuating rod	1.50
72.35	Table	40.00
72.38	Motor base—¾ h.p.	6.50
72.58	Column	25.00
71.12	Plunger body	5.50
71.13	Plunger wheels (4)	6.00
71.14	Plunger wheel shafts (2)	.40
71.15	Plunger wheel adjusting washers (4)	.20
71.16	Plunger eye shaft	.50
71.17*	Plunger tube eye	1.00
71.18	Stripper plate bolt	.10

PART NUMBER	PART NAME	LIST PRICE**
71.19	Stripper bolt washer	$ .20
71.20	Stripper plate	2.75
71.21	Stripper body	10.00
71.28	Reverse weight rod	1.50
71.29	Reverse weight	1.00
71.30	Down stop thumb lock screw	.15
71.31	Down stop adjusting nut	.50
71.32	Down stop rod	1.40
71.33	Down stop rod nuts (2)	.20
71.34	Reverse buffer lock thumb screw	.10
71.35	Reverse buffer lock screw plug	.10
71.36	Buffer hand rip & adjusting screw	5.00
71.38	Buffer strike rod bolt	.15
71.39	Reverse buffer spring	.50
71.40	Reverse buffer strike rod	.85
71.41*	Down spring swivel	.40
71.42*	Plunger tube	2.50
71.43*	Plunger tube collar	.20
71.44*	Down spring	1.50
71.45*	Down spring adjusting nut	.85
71.46	Plunger position adjusting nut & grip	2.40
71.48	Plunger tube & foot lever eye bolt	3.50
71.49	Eye bolt shaft	.35
71.50	Foot lever shaft set screw	.10
71.51	Foot lever shaft	.30
71.52	Foot lever ball bearings (2)	1.10
71.53	Foot lever	15.00
71.54	Base column clamp bolt	.15
71.54a	Base column clamp bolt nut	.10
71.55	Base	35.00
71.58	Oil pot needle valve	5.40
71.59	Flexible tube with brush nozzle	7.00
71.61	Brush tube eye bolt	.70
71.62	Brush tube wing nut	.10
71.63	Brush tube clamp (inner half)	.75
71.64	Brush tube clamp (outer half)	.75
71.65	Oil brush	.30
71.66	Brush tube post	.50
	Machine light	3.50
	Machine light screws (2)	.10

** F.O.B. Brooklyn. Subject to change without notice.

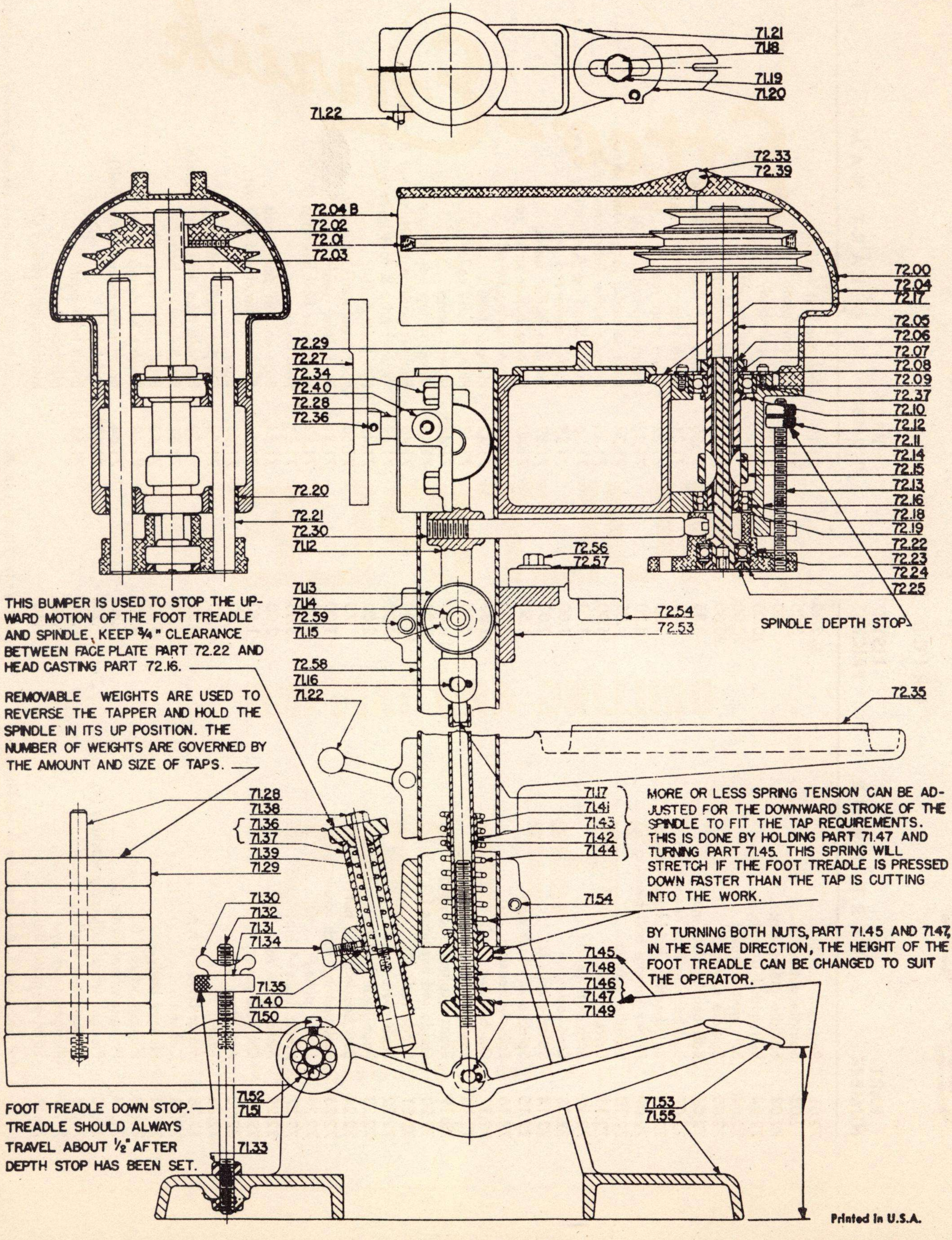
* Part Nos. 71.17, 71.41, 71.42, 71.43, 71.44, 71.45 are usually sold as a complete assembly Price $10.00

ETTCO TOOL CO., INC. **594 Johnson Ave., Brooklyn 6, N. Y.**

Ettco-Emrick

No. 72 FOOT OPERATED

TAPPING MACHINE



SPINDLE DEPTH STOP

THIS BUMPER IS USED TO STOP THE UPWARD MOTION OF THE FOOT TREADLE AND SPINDLE, KEEP ¾" CLEARANCE BETWEEN FACE PLATE PART 72.22 AND HEAD CASTING PART 72.16.

REMOVABLE WEIGHTS ARE USED TO REVERSE THE TAPPER AND HOLD THE SPINDLE IN ITS UP POSITION. THE NUMBER OF WEIGHTS ARE GOVERNED BY THE AMOUNT AND SIZE OF TAPS.

MORE OR LESS SPRING TENSION CAN BE ADJUSTED FOR THE DOWNWARD STROKE OF THE SPINDLE TO FIT THE TAP REQUIREMENTS. THIS IS DONE BY HOLDING PART 71.47 AND TURNING PART 71.45. THIS SPRING WILL STRETCH IF THE FOOT TREADLE IS PRESSED DOWN FASTER THAN THE TAP IS CUTTING INTO THE WORK.

BY TURNING BOTH NUTS, PART 71.45 AND 71.47, IN THE SAME DIRECTION, THE HEIGHT OF THE FOOT TREADLE CAN BE CHANGED TO SUIT THE OPERATOR.

FOOT TREADLE DOWN STOP. TREADLE SHOULD ALWAYS TRAVEL ABOUT ½" AFTER DEPTH STOP HAS BEEN SET.

Printed in U.S.A.

Bulletin No. 32
March, 1951

Ettco-Emrick

MULTIPLE

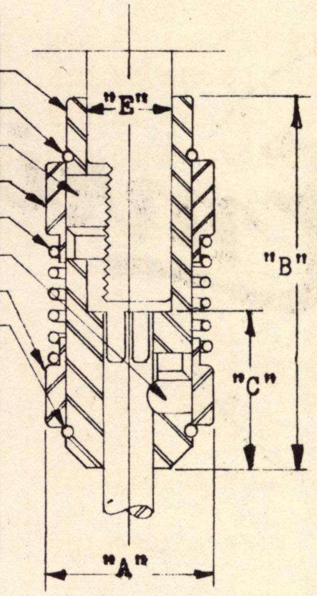
DRILLING AND TAPPING

CHUCKS

ETTCO TOOL CO., INC.
594 Johnson Avenue, Brooklyn 6, N. Y.

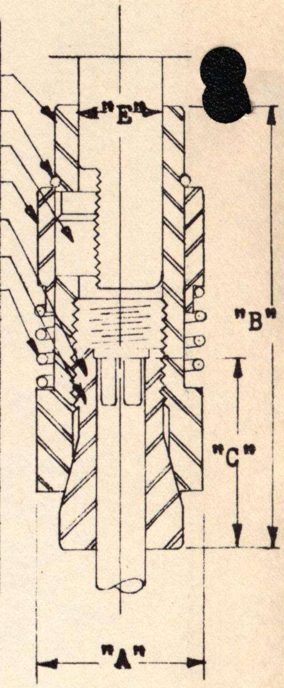
VERTICALLY ADJUSTABLE FLOATING TAP CHUCK

	40.00	41.00	46.00
	40.01	41.01	46.01
	40.05	41.05	---
	40.02	41.02	46.02
	40.04	41.04	46.04
	40.06	41.06	46.06
	40.03	41.03	46.03
	40.04	41.04	46.04
	40.05	41.05	46.05
A	3/4	7/8	1-1/4
B	1-15/16	1-15/16	2-25/32
C	13/16	13/16	1-1/8
E	.375	.4375	.625
	TAP CAPACITY		
	#10	5/16	1/2



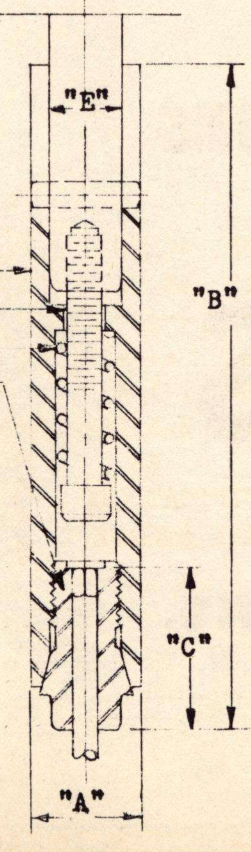
VERT. ADJ. COLLET TYPE DRILL & TAP CHUCKS

	39.00	42.00	57.00	45.00
	39.01	42.01	57.01	45.01
	41.05	42.06	42.06	46.05
	40.02	41.02	41.02	46.02
	39.04	42.04	41.04	46.04
D	44.02	42.02	45.03	45.03
T	44.03	43.02	45.02	45.02
	----	---	---	46.06
A	11/16	7/8	1-1/8	1-1/4
B	2-5/16	2-5/16	3	3-9/16
Cd	7/8	1-1/16	1-5/8	1-5/8
Ct	3/4	13/16	1-1/2	1-1/2
E	.375	.4375	.4375	.625
	DRILL & TAP CAPACITY			
D	3/16	5/16	"V"	"V"
T	#10	5/16	1/2	1/2



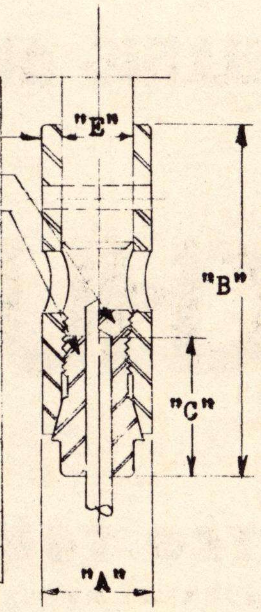
PITCH COMPENSATING COLLE. TYPE TAP CHUCKS

	58.00	59.00
	58.01	59.01
	58.02	59.02
	58.03	59.03
T	44.03	45.02
A	9/16	1-1/8
B	3-1/2	4-1/2
C	3/4	1-1/2
E	.375	.4375
	TAP CAPACITY	
	#10	1/2



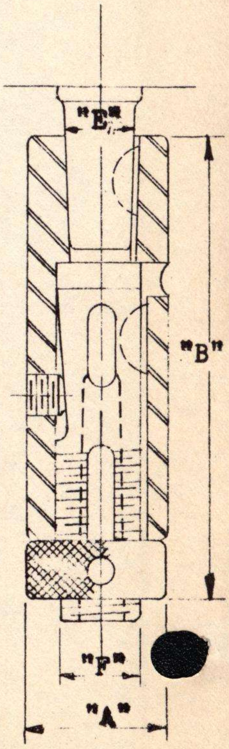
COLLET TYPE DRILL & TAP CHUCK

	44.00	54.00
	44.01	54.01
D	44.02	54.02
T	44.03	54.03
A	9/16	15/32
B	1-7/8	1-7/8
Cd	7/8	27/32
Ct	3/4	3/4
E	.375	.250
	1A	.3125
	DRILL & TAP CAPACITY	
D	3/16	5/32
T	#10	#8



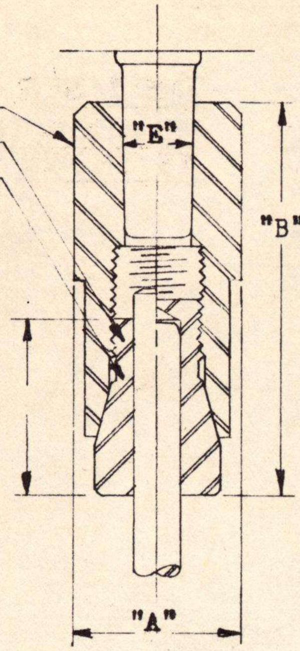
SCULLY JONES TYPE VERT. ADJ. CHUCK

F	3/4"	1"
A	1-1/4	1-1/2
B	4-11/16	4-15/16
E	33	33
	CAPACITY	
	1 M.T.	1 M.T. 2 M.T.



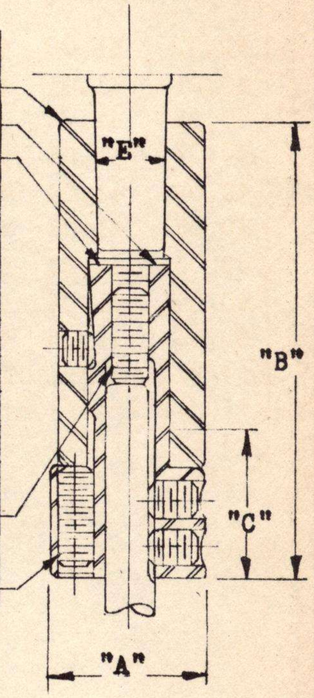
COLLET TYPE DRILL & TAP CHUCKS

	43.00	56.00
	43.01	56.01
D	42.02	45.03
T	43.02	45.02
A	7/8	1-1/8
B	2-1/16	3-1/4
Cd	1-1/16	1-5/8
Ct	13/16	1-1/2
E	1A	33
	DRILL & TAP CAPACITY	
D	5/16	"V"
T	5/16	1/2



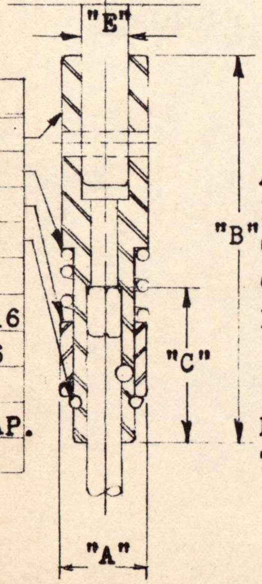
VERT. ADJ. COLLET TYPE DRILL & TAP CHUCK

	53.00S	53.00A	53.00B	53.00C
	53.01S	53.01A	53.01B	53.01C
D	53.02S	53.02A	53.02B	53.02C
T	53.03S	53.03A	53.03B	53.03C
A	15/32	.610	25/32	1-3/32
B	2-1/4	2-1/4	2-3/8	2-15/16
Cd	3/4	3/4	1-1/8	1-1/8
Ct	3/4	3/4	15/16	1-5/16
E	.312	1A	1A	33
	DRILL & TAP CAPACITY			
D	5/32	7/32	9/32	7/16
T	#8	#10	1/4	1/2
	ROUGH ADJUSTMENT			
	1/4	1/4	1/4	1/4
	FINE ADJUSTMENT			
	1/4	1/4	1/4	1/4

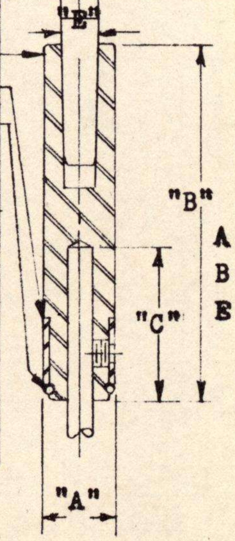


SINGLE PURPOSE DRILL & TAP CHUCKS

	52.00
	52.01
	52.02
	52.03
	52.04
A	7/16
B	1-15/16
C	13/16
E	.250
	TAP-CAP.
	#8

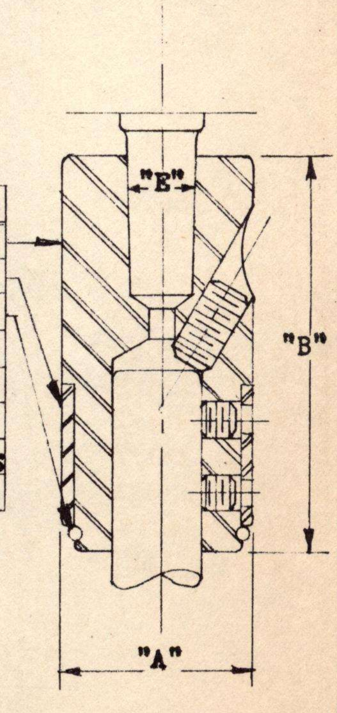


	55.00-2P
	55.01P
	55.02P
	55.03P
A	23/64
B	1-7/8
Cd	13/16
Ct	13/16
E	#2 PIN TAPER
	D&T CAP
D	5/32
T	#8



VERT. ADJ. SINGLE PURPOSE DRILL CHUCK

	48.00A	48.00B	48.00
	48.01A	48.01B	48.01
	48.02A	----	----
	48.03A	----	----
A	1	11/16	1-1/4
B	2-1/16	2-1/16	3-5/16
E	1A	1A	33
	CAP.-TO SPECIFICATIONS		
	½ SHANK	¼ SHANK	½ SHANK

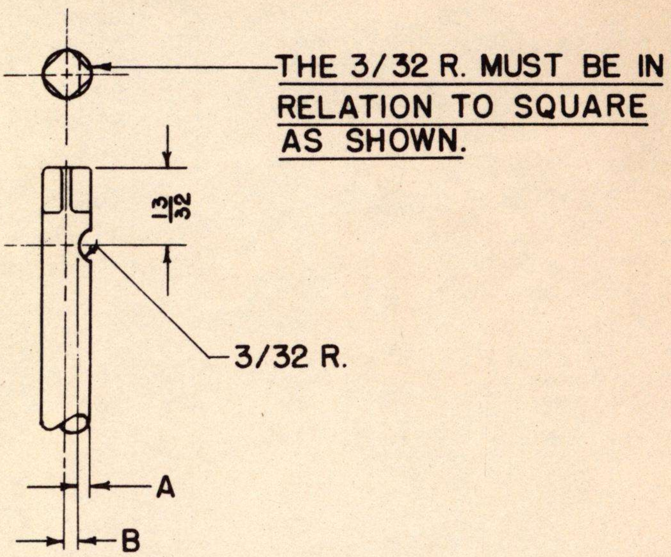


MAXIMUM CAPACITIES INDICATED

Hm

3/32 R. & 13/32 DIMENSION REMAIN THE SAME FOR ALL TAPS

1/4 TAP SHOWN



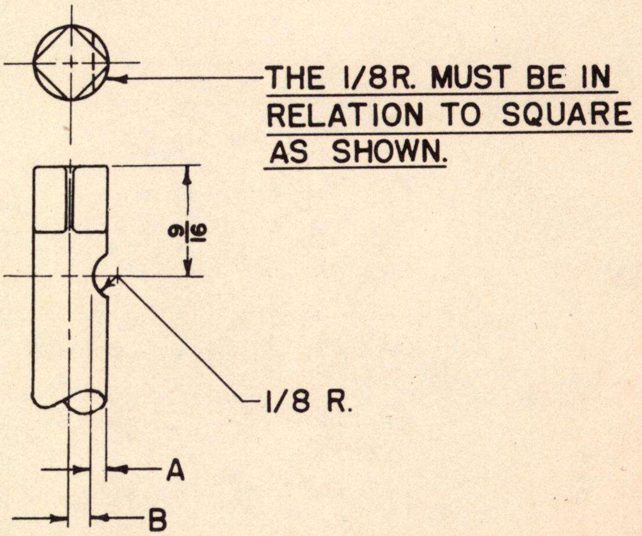
THE 3/32 R. MUST BE IN RELATION TO SQUARE AS SHOWN.

TAP SHANK TO FIT ETTCO NO. 41.00 MULTIPLE HEAD TAP HOLDING CHUCKS

TAP SIZE	1/8-#6	5/32	#8	3/16-10	#12	#14	1/4	5/16	3/8 SM	7/16 SP
DIMENSION "A"	.045	.045	.045	.050	.055	.055	.055	.069	.058	.072
DIMENSION "B"	.025	.033	0 39	.047	.055	.070	.070	.090	.080	090

1/8 R. & 9/16 DIMENSION REMAIN THE SAME FOR ALL TAPS

3/8 TAP SHOWN



THE 1/8R. MUST BE IN RELATION TO SQUARE AS SHOWN.

TAP SHANK TO FIT ETTCO NO. 46.00 MULTIPLE HEAD TAP HOLDING CHUCKS

TAP SIZE	3/16-10	#12	1/4	5/16	3/8 SM.	3/8 STD.	7/16	1/2
DIMENSION "A"	.049	.052	.055	.061	.055	.063	.069	.068
DIMENSION "B"	.048	.058	.073	.098	.083	.128	.093	.116

LITHO'D IN U.S.A. HM